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# GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS

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HEARINGS
BEFORE THE
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
NINETY-EIGHTH CONGRESS
FIRST SESSION
ON THE
GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS

MAY 19, JUNE 20, AND JULY 22, 1983

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# GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS

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THURSDAY, MAY 19, 1983

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
*Washington, D.C.*

The committee met, pursuant to notice, at 10:35 a.m., in Room SD-366, Dirksen Office Building, Hon. James A. McClure, chairman, presiding.

Present: Senators McClure, Warner, Murkowski, and Hecht.

Also present: Robert Terrell, professional staff member; D. Michael Harvey, chief counsel for the minority; and Linda Mason, professional staff member for the minority.

## OPENING STATEMENT OF HON. JAMES A. McCLURE, A U.S. SENATOR FROM THE STATE OF IDAHO

The CHAIRMAN. Good morning. Today's hearing marks the beginning of a series of hearings to be held before this committee concerning the geopolitics of strategic and critical materials.

The committee will hold further hearings on this subject on June 20 to hear from representatives of the ferroalloy industry, die casting industry, aerospace industry, mining industry, and other users of strategic and critical minerals. On July 22, the committee will hear from representatives of the various international financing institutions with respect to their role in financing foreign mining and mineral development.

As my colleagues know, this committee has conducted extensive hearings on the geopolitics of oil in the past several years. The purpose of those hearings, among other things, was to determine the implications of the changing nature of the world oil market and to identify the factors that are likely to affect access to and the cost of oil both in monetary and political terms through the rest of the century.

While developments in the world oil markets have and will continue to have a significant impact upon the United States and the rest of the free world, oil should not be viewed as the only commodity of strategic and critical importance to the United States. Of equal importance to our survival as an industrialized democratic society is the availability of an adequate and secure supply of strategic and critical minerals.

Currently, this Nation is dependent upon foreign sources for over 50 percent of half of the 40 minerals considered to be essential to our multitrillion-dollar economy. Many of those sources are considered to be politically and economically unstable. In 1982, we imported 28 billion dollars' worth of these minerals.

Our import dependence pales in comparison to Europe, which is, 75 percent dependent upon foreign sources, and Japan which is 90 percent dependent. Even more troublesome is the realization that the Soviet Union is relatively self-sufficient for over half of the same 40 strategic and critical minerals. The Soviet's self-sufficiency in these minerals, coupled with their presence in or near those countries that supply a significant percentage of the world's demand for such minerals, is extremely alarming.

Let us not kid ourselves. Their presence in and around central and southern Africa, among other places in the world, is part of an overall objective that they have pursued for over three decades. That objective is one that seeks to develop a viable oil and strategic minerals denial strategy either through physical disruption, market manipulation, or domination of producer or neighboring states. Their aim is to undermine Western ties with the oil and strategic minerals alliance over policies toward those regions and thus erode the economic health and political cohesion of the West.

Evidence of the Soviet's intent to disrupt, manipulate, or dominate producers or neighboring states lies in their projection of military power around the world. For example, the Soviets and their Cuban surrogates have approximately 38,000 to 44,000 military personnel in the sub-Saharan region of Africa, and approximately 8,000 military personnel in the Mideast and northern Africa regions. This presence of military personnel is particularly significant when viewed with the estimated world reserve percentages for strategic and critical minerals in these regions. These regions contain 95 percent of the world's chrome, 86 percent of the world's platinum, 64 percent of the world's vanadium, and 53 percent of the world's manganese, and 52 percent of the world's cobalt.

The United States currently imports from the sub-Saharan region 53 percent of its manganese ore and 38 percent of its ferromanganese, 40 percent of its chromite, and 71 percent of its ferrochromium, 53 percent of its platinum group metals, 55 percent of its vanadium, and 55 percent of its cobalt.

Because most of these minerals are not now found in economic concentrations in the United States and, therefore, will have to be imported, we must be concerned that our import dependence does not become one of import vulnerability. Thus import dependence must be distinguished from import vulnerability, the latter resulting from future supply disruptions. In other words, reducing import dependence would not necessarily eliminate our vulnerability to future supply disruptions.

Whether or not this Nation could rely on the continued availability of vital, strategic, and critical minerals from abroad in a national emergency is questionable. Clearly we will not be able to rely on those minerals and materials presently located in the national defense stockpile since over half of the 61 family groups and materials needed for the stockpile are woefully deficient. While the current administration has taken steps to acquire those minerals and materials that are deficient in the stockpile, it has been estimated by the General Accounting Office that at the current rate of funding, it will take over 60 years to fill the stockpile with needed materials.

I mention the national defense stockpile particularly because its existence has been used in the past as an argument against the need for domestic mineral development and an argument against the dangers of import vulnerability. The fallacy of this argument goes hand in glove with other arguments such as there is no problem if we pursue recycling, substitution, and conservation, or we must resolve ourselves that the United States is a have-not nation. There are only low grade or submarginal mineral deposits remaining in the United States. The fallacy in these arguments should be obvious.

First, recycling, substitution, and conservation are not in themselves the solution but are important elements of a solution.

Second, to suggest that this country no longer has any high-grade mineral deposits to discover is absurd and without evidence. Certainly at the rate we are placing Federal lands off limits to exploration in this country, it is not inconceivable that such a statement might one day be accurate, so what are we doing to assure the adequacy of a supply of critical minerals for this country?

It is clear to me that we are doing precious little for our domestic mining industry to provide for a stable supply of critical minerals. In the international arena, we fund foreign mining projects through the World Bank and other international lending institutions with the objective of assuring an adequate supply of critical minerals. However, much of the funds loaned to various countries for this purpose have been severely jeopardized due to actions taken by foreign countries in nationalizing certain mining projects. Because of these actions, U.S. investors feel constrained to temper their investments in foreign mining projects.

In addition, many of our foreign investments have worked a hardship on our own domestic mining industry. A good case in point is the recently announced intention of the International Finance Corporation to assist the Compania Mineral de Cananea, S.A., of Mexico, in a $1 billion project to triple capacity at its copper operation just 30 miles south of the United States. This comes at a time when the U.S. copper industry has been devastated by world economic conditions and has been at a virtual shutdown in recent months.

It's time to look closely at the policies of the Federal Government with respect to whether or not they are beneficial in securing access to a stable supply of critical minerals from abroad or in fact work against that effort. These policies would include foreign policy, lending policies, intelligence monitoring policies and activities, defense-related policies, et cetera. It is my intent to pursue all of these policies in the coming months.

[The prepared statement of Senator McClure follows:]

STATEMENT OF
SENATOR JAMES A. McCLURE
BEFORE THE
COMMITTEE ON ENERGY AND MINERAL RESOURCES
MAY 19, 1983

HEARING: "GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS"

GOOD MORNING. TODAY'S HEARING MARKS THE BEGINNING OF A SERIES OF HEARINGS TO BE HELD BEFORE THIS COMMITTEE CONCERNING THE GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS. THE COMMITTEE WILL HOLD FURTHER HEARINGS ON THIS SUBJECT ON JUNE 9th TO HEAR FROM REPRESENTATIVES OF THE FERROALLOY INDUSTRY, DIE CASTING INDUSTRY, AEROSPACE INDUSTRY, MINING INDUSTRY, AND OTHER USERS OF STRATEGIC AND CRITICAL MINERALS. ON JUNE 30, THE COMMITTEE WILL HEAR FROM REPRESENTATIVES OF THE VARIOUS INTERNATIONAL FINANCING INSTITUTIONS WITH RESPECT TO THEIR ROLE IN FINANCING FOREIGN MINING AND MINERAL DEVELOPMENT.

AS MY COLLEAGUES KNOW, THIS COMMITTEE HAS CONDUCTED EXTENSIVE HEARINGS ON THE GEOPOLITICS OF OIL IN THE PAST SEVERAL YEARS. THE PURPOSE OF THOSE HEARINGS, AMONG OTHER THINGS, WAS TO DETERMINE THE IMPLICATIONS OF THE CHANGING NATURE OF THE WORLD OIL MARKET AND TO IDENTIFY THE FACTORS THAT ARE LIKELY TO AFFECT ACCESS TO AND THE COST OF OIL, BOTH IN MONETARY AND POLITICAL TERMS, THROUGH THE REST OF THIS CENTURY.

WHILE DEVELOPMENTS IN THE WORLD OIL MARKETS HAVE, AND WILL CONTINUE TO HAVE A SIGNIFICANT IMPACT UPON THE UNITED STATES AND THE REST OF THE FREE WORLD, OIL SHOULD NOT BE VIEWED AS THE ONLY COMMODITY OF STRATEGIC AND CRITICAL IMPORTANCE TO THE UNITED STATES.

OF EQUAL IMPORTANCE TO OUR SURVIVAL AS AN INDUSTRIALIZED DEMOCRATIC SOCIETY IS THE AVAILABILITY OF AN ADEQUATE AND SECURE SUPPLY OF STRATEGIC AND CRITICAL MINERALS. CURRENTLY THIS NATION IS DEPENDENT UPON FOREIGN SOURCES FOR OVER 50 PERCENT OF HALF THE FORTY MINERALS CONSIDERED TO BE ESSENTIAL TO OUR MULTITRILLION-DOLLAR ECONOMY. MANY OF THESE SOURCES ARE CONSIDERED TO BE POLITICALLY AND ECONOMICALLY UNSTABLE. IN 1982, WE IMPORTED 28 BILLION DOLLARS WORTH OF THESE MINERALS.

OUR IMPORT DEPENDENCE PALES IN COMPARISON TO EUROPE, WHICH IS 75 PERCENT DEPENDENT UPON FOREIGN SOURCES, AND JAPAN, WHICH IS 90 PERCENT DEPENDENT. EVEN MORE TROUBLESOME, IS THE REALIZATION THAT THE SOVIET UNION IS RELATIVELY SELF-SUFFICIENT FOR OVER HALF OF THE SAME FORTY STRATEGIC AND CRITICAL MINERALS. THE SOVIET'S SELF-SUFFICIENCY IN THESE MINERALS COUPLED WITH THEIR

PRESENCE IN OR NEAR THOSE COUNTRIES THAT SUPPLY A SIGNIFICANT PERCENTAGE OF THE WORLD'S DEMAND FOR SUCH MINERALS IS EXTREMELY ALARMING.

LET US NOT KID OURSELVES, THEIR PRESENCE IN AND AROUND CENTRAL AND SOUTHERN AFRICA, AMONG OTHER PLACES IN THE WORLD, IS PART OF AN OVERALL OBJECTIVE THAT THEY HAVE PURSUED FOR OVER THREE DECADES. THAT OBJECTIVE IS ONE THAT SEEKS TO DEVELOP A VIABLE OIL AND STRATEGIC MINERALS DENIAL STRATEGY, EITHER THROUGH PHYSICAL DISRUPTION, MARKET MANIPULATION, OR DOMINATION OF PRODUCER OR NEIGHBORING STATES. THEIR AIM IS TO UNDERMINE WESTERN TIES WITH THE OIL AND STRATEGIC MINERALS PRODUCERS AND THEREBY EXACERBATE DIFFERENCES IN THE WESTERN ALLIANCE OVER POLICIES TOWARDS THESE REGIONS AND THUS ERODE THE ECONOMIC HEALTH AND POLITICAL COHESION OF THE WEST.

EVIDENCE OF THE SOVIET'S INTENT TO DISRUPT, MANIPULATE OR DOMINATE PRODUCERS OR NEIGHBORING STATES LIES IN THEIR PROJECTION OF MILITARY POWER AROUND THE WORLD. FOR EXAMPLE, THE SOVIET'S AND THEIR CUBAN SURROGATES HAVE APPROXIMATEY 38,000-44,000 MILITARY PERSONNEL IN THE SUB-SAHARAN REGION OF AFRICA AND APPROXIMATELY 8,000 MILITARY PERSONNEL IN THE MIDEAST AND NORTHERN AFRICA REGIONS. THIS PRESENCE OF MILITARY PERSONNEL IS PARTICULARLY SIGNIFICANT WHEN VIEWED WITH THE ESTIMATED WORLD RESERVE PERCENTAGES FOR STRATEGIC AND CRITICAL MINERALS IN THESE REGIONS. THESE REGIONS CONTAIN 95% OF THE WORLD'S CHROME, 86% OF THE WORLD'S PLATINUM, 64% OF THE WORLD'S VANADIUM, 53% OF THE WORLD'S MANGANESE, AND 52% OF THE WORLD'S COBALT.

THE UNITED STATES CURRENTLY IMPORTS FROM THE SUB-SAHARAN REGION 53% OF ITS MANGANESE ORE AND 38% OF ITS FERROMANGANESE, 40% OF ITS CHROMITE AND 71% OF ITS FERROCHROMIUM, 53% OF ITS PLATINUM-GROUP METALS, 55% OF ITS VANADIUM, AND 55% OF ITS COBALT. BECAUSE MOST OF THESE MINERALS ARE NOT NOW FOUND IN ECONOMIC CONCENTRATIONS IN THE UNITED STATES AND THEREFORE WILL HAVE TO BE IMPORTED, WE MUST BE CONCERNED THAT OUR IMPORT DEPENDENCE DOES NOT BECOME ONE OF IMPORT VULNERABILITY. THUS, IMPORT DEPENDENCE MUST BE DISTINGUISHED FROM IMPORT VULNERABILITY, THE LATTER RESULTING FROM FUTURE SUPPLY DISRUPTIONS. IN OTHER WORDS, REDUCING IMPORT DEPENDENCE WOULD NOT NECESSARILY ELIMINATE OUR VULNERABILITY TO FUTURE SUPPLY DISRUPTIONS.

WHETHER OR NOT THIS NATION COULD RELY ON THE CONTINUED AVAILABILITY OF VITAL STRATEGIC AND CRITICAL MINERALS FROM ABROAD IN A NATIONAL EMERGENCY IS QUESTIONABLE. CLEARLY, WE WILL NOT BE ABLE TO RELY ON THOSE MINERALS AND MATERIALS PRESENTLY LOCATED IN THE NATIONAL DEFENSE STOCKPILE, SINCE OVER HALF OF THE 61 FAMILY GROUPS AND MATERIALS NEEDED FOR THE STOCKPILE ARE WOEFULLY DEFICIENT. WHILE THE CURRENT ADMINISTRATION HAS TAKEN STEPS TO ACQUIRE THOSE MINERALS AND MATERIALS THAT ARE DEFICIENT IN THE STOCKPILE, IT HAS BEEN ESTIMATED BY THE GENERAL ACCOUNTING OFFICE THAT, AT THE CURRENT RATE OF FUNDING, IT WILL TAKE OVER 60 YEARS TO FILL THE STOCKPILE WITH NEEDED MATERIALS.

I MENTION THE NATIONAL DEFENSE STOCKPILE PARTICULARLY BECAUSE ITS EXISTENCE HAS BEEN USED IN THE PAST AS AN ARGUMENT AGAINST THE NEED FOR DOMESTIC MINERAL DEVELOPMENT AND AS AN ARGUMENT AGAINST THE DANGERS OF IMPORT VULNERABILITY. THE FALLACY OF THIS ARGUMENT GOES HAND-IN-GLOVE WITH OTHER SUCH ARGUMENTS AS -- "THERE IS NO PROBLEM IF WE PURSUE RECYCLING, SUBSTITUTION AND CONSERVATION", OR "WE MUST RESOLVE OURSELVES THAT THE UNITED STATES IS A HAVE-NOT NATION -- THERE ARE ONLY LOW-GRADE OR SUBMARGINAL MINERAL DEPOSITS REMAINING IN THE U.S." THE FALLACY IN THESE ARGUMENTS SHOULD BE OBVIOUS. FIRST, RECYCLING, SUBSTITUTION, AND CONSERVATION ARE NOT, IN THEMSELVES, THE SOLUTION BUT ARE IMPORTANT ELEMENTS OF A SOLUTION. SECOND, TO SUGGEST THAT THIS COUNTRY NO LONGER HAS ANY HIGH-GRADE MINERAL DEPOSITS TO DISCOVER IS ABSURD AND WITHOUT EVIDENCE. CERTAINLY AT THE RATE WE ARE PLACING FEDERAL LANDS OFF-LIMITS TO EXPLORATION IN THIS COUNTRY, IT IS NOT INCONCEIVABLE THAT SUCH A STATEMENT MIGHT ONE DAY BE ACCURATE.

SO WHAT ARE WE DOING TO ASSURE THE ADEQUACY OF SUPPLY OF CRITICAL MINERALS FOR THIS COUNTRY? IT IS CLEAR TO ME THAT WE ARE DOING PRECIOUS LITTLE FOR OUR DOMESTIC MINING INDUSTRY TO PROVIDE FOR A STABLE SUPPLY OF CRITICAL MINERALS, IN THE INTERNATIONAL ARENA, WE FUND FOREIGN MINING PROJECTS THROUGH

THE WORLD BANK AND OTHER INTERNATIONAL LENDING INSTITUTIONS WITH THE OBJECTIVE OF ASSURING AN ADEQUATE SUPPLY OF CRITICAL MINERALS. HOWEVER, MUCH OF THE FUNDS LOANED TO VARIOUS COUNTRIES FOR THIS PURPOSE HAVE BEEN SEVERELY JEOPARDIZED DUE TO ACTIONS TAKEN BY FOREIGN COUNTRIES IN NATIONALIZING CERTAIN MINING PROJECTS. BECAUSE OF THESE ACTIONS, U.S. INVESTORS FEEL CONSTRAINED TO TEMPER THEIR INVESTMENTS IN FOREIGN MINING PROJECTS.

IN ADDITION, MANY OF OUR FOREIGN INVESTMENTS HAVE WORKED A HARDSHIP ON OUR OWN DOMESTIC MINING INDUSTRY. A GOOD CASE IN POINT IS THE RECENT ANNOUNCED INTENTION OF THE INTERNATIONAL FINANCE CORPORATION TO ASSIST THE COMPANIA MINERAL de CANANEA, S.A. OF MEXICO IN A ONE BILLION DOLLAR PROJECT TO TRIPLE CAPACITY AT ITS COPPER OPERATION JUST THIRTY MILES SOUTH OF THE UNITED STATES. THIS COMES AT A TIME WHEN THE UNITED STATES COPPER INDUSTRY HAS BEEN DEVASTATED BY WORLD ECONOMIC CONDITIONS AND HAS BEEN AT A VIRTUAL SHUT DOWN IN RECENT MONTHS.

ITS TIME TO LOOK CLOSELY AT THE POLICIES OF THE FEDERAL GOVERNMENT WITH RESPECT TO WHETHER OR NOT THEY ARE BENEFICIAL IN SECURING ACCESS TO A STABLE SUPPLY OF CRITICAL MINERALS FROM ABROAD OR IN FACT WORK AGAINST THAT EFFORT. THESE POLICIES WOULD INCLUDE FOREIGN POLICY, LENDING POLICIES, INTELLIGENCE MONITORING POLICIES, DEFENSE RELATED POLICIES, ETC. IT IS MY INTENT TO PURSUE ALL OF THESE POLICIES IN THE COMING MONTHS.

The **Chairman**. At this time I would like to recognize the chairman of the relevant subcommittees of this committee, a member of the committee who has been very much interested in this issue who wears two hats in the Congress, both very important and related to it—one in this committee and the other in the Armed Services Committee, and his interest in defense is well known and his expertise and background is beyond question, and I would like to call upon Senator Warner at this point.

## STATEMENT OF HON. JOHN W. WARNER, A U.S. SENATOR FROM THE STATE OF VIRGINIA

Senator **Warner**. Thank you, Mr. Chairman. I will be very brief so that we can hear from our distinguished panel of witnesses.

Again, Mr. Chairman, I congratulate you for initiating this hearing. I have always had a firm belief—as I look at General Walters and Admiral Mott, I think they would agree with me—that this Nation's national defense can be no stronger than the foundation on which it rests, and that foundation is this Nation's economy, its industrial base, and its mining base. No matter how many ships, airplanes, or how many well-equipped or well-trained men and women are in the Armed Forces, it is that foundation that ultimately supports them.

I would like to just read one short paragraph that I read and reread time and time again to keep my interest in this subject. It was stated by Leonid Brezhnev in a speech in 1973, and I quote it.

> Our aim is to gain control of the two great treasure houses on which the West depends: the energy treasure house of the Persian Gulf and the mineral treasure house of Central and Southern Africa.

I am sure General Walters can elaborate on that in some detail.

Thank you, Mr. Chairman.

[The prepared statement of Senator Warner follows:]

### Statement of Hon. John W. Warner, a U.S. Senator From the State of Virginia

I commend Chairman McClure for scheduling a series of hearings on the geopolitics of strategic and critical minerals. I welcome the five distinguished witnesses this morning and am confident their testimony will make an important contribution to our understanding of the geopolitical situation regarding strategic and critical materials.

I am particularly pleased to see my longtime friend Adm. Bill Mott who is recognized as one of the world's top authorities on strategic minerals.

Last year I held oversight hearings in my subcommittee on strategic minerals policy with particular emphasis on the problems facing our domestic mining industry and the deficiencies in our national defense stockpile. Senator McClure and I continue to work together to program up to $50 million in the Department of Defense budget for purchase agreements for the American production of strategic minerals.

Our national defense—the guns, ships, and planes—can be no stronger than the foundation upon which it rests. That foundation is our Nation's economy and its industrial and mining capacity.

Not so long ago, the United States could proclaim itself basically a self-sufficient Nation. If we needed more food, we grew it; if we needed more raw material, we mined it or pumped it from the ground; if we need more machinery and equipment, we built it; if there was a better way of accomplishing these things, we invented the technology to do it.

Today, we can still claim agricultural self-sufficiency, but that is the only case that can be made. We've learned the hard way just how insufficient we are with respect to oil. How long will it be before the United States realizes our minerals self-sufficiency is also rapidly evaporating?

Our dependence on foreign sources for vital strategic and critical minerals has grown substantially in the last three decades. The more import dependent we become, the more vulnerable we become.

We all recognize that no modern nation can be totally self-sufficient in its energy and mineral needs. But there is at least one nation aggressively pursuing a strategy to mitigate aganist mineral dependency. That nation is the Soviet Union.

The dependence of the Soviet Union for certain strategic and critical minerals is far less than the United States. Nevertheless, the Soviets are establishing a military presence around the world to assure access to adequate supplies of vital raw materials.

I call the committee's attention to a 1973 statement by the late Leonid Brezhnev: "Our aim it to gain control of the two great treasure houses on which the West depends: The energy treasure house of the Persian Gulf and the mineral treasure house of central and southern Africa."

The Soviet's drive for strategic and critical minerals will be at least as great as any effort to gain control of the petroleum flow from the Persian Gulf. The Soviet's military presence indicates a clear intent to gain access to southern Africa's mineral resources on which the United States depends for 98 percent of our manganese, 100 percent of our chrome, 56 percent of our platinum, 58 percent of our vanadium, and 51 percent of our cobalt.

We must constantly be aware of what is going on in those areas of the world where the United States is import dependent so that we avoid becoming import vulnerable. A lack of vigilence threatens our national security and economic survival.

I look forward to the testimony this morning.

The **CHAIRMAN**. Thank you. One of the newest members, a very valuable member of this committee, Senator Hecht.

## STATEMENT OF HON. CHIC HECHT, A U.S. SENATOR FROM THE STATE OF NEVADA

Senator **HECHT**. Thank you, Mr. Chairman. I would just like to say a couple of words.

I am very happy to see General Walters. I am anxious to hear his remarks, and I use the term "fellow cohort" if that is the right word to use, and I would say I don't think there is any American who has done more for this country and the free world than General Walters. I will be very anxious to hear from you, sir.

The **CHAIRMAN**. Thank you very much. I think Senator Murkowski has an opening statement that if he arrives he can give it.

With that, let's turn to the witnesses. Our first witness this morning is Hon. Vernon A. Walters, Ambassador-at-Large to the Department of State. Mr. Ambassador, you may proceed. Your entire statement will be placed in the record, and you may give it or summarize it and proceed in whichever manner you would prefer, Mr. Ambassador.

Ambassador **WALTERS**. If it pleases the committee, Mr. Chairman, I think that a number of copies have been distributed and it would be kinder for everyone's time, especially the committee's, if I just summarized briefly the statement which I presented.

Senator **WARNER**. If I might interrupt, Mr. Chairman, you said proceed in any manner he wishes. My recollection is he is skilled in nine languages, so I would hope it would be in the English language!

Ambassador **WALTERS**. It will be. It will be.

## STATEMENT OF HON. VERNON A. WALTERS, AMBASSADOR-AT-LARGE, DEPARTMENT OF STATE

Ambassador **WALTERS**. As you have stated in your statement, sir, so eloquently, Mr. Chairman, the United States is seriously dependent on a number of very important strategic materials and one of the major tasks of U.S. diplomacy is, of course, to keep access to these strategic materials open and available to us and to the measure of our capability ward off any threats to them coming from the Soviet attempt to implement the statement which Senator Warner read of obtaining control of the treasure house of the Middle East and the treasure house of Central and Southern Africa.

Any loss of access to these materials, of course, would be extremely serious for us. I am old enough to remember the tremendous problem that was created by loss of access to Malayan rubber at the outset of World War II, the tremendous synthetic program we went into, the tremendous program in Brazil where we attempted to produce real rubber in very large quantities in a very short space of time.

Of these strategic materials, I think cobalt, chromium, manganese, and the platinum family are perhaps the ones on which our dependency is the greatest. There are a small number of suppliers of these and they are concentrated in central and in southern Africa. As you said, we imported a very large amount of unprocessed materials in 1982, and a very large quantity of processed materials as well, something on the order of $28 billion. Within the U.S. Government structure, it is the Cabinet Council on Natural Resources and Environment that has been entrusted by President Reagan with the responsibility to coordinate strategic materials policy. They submitted a report to the Congress in April of 1982 and the constitution of that committee and its functioning is an evidence of the concern at the highest levels for this problem.

We also work with a number of other foreign countries on keeping track of production and in fact the Department of State does have 10 regional resource officers in the principal producing countries who keep track of investment, production, exports and so forth.

The national defense stockpile as you know was created in 1979 and it covers some 69 materials out of a total of 93 forms that we need. It cannot be used, however, for economic ends and does not directly affect the private sector, but it is an insurance against emergencies of some duration, but as you pointed out, it is far from sufficient for all of the requirements that we might have over a prolonged period of an emergency. The administration has requested from the Congress funding for some $200 million for the defense stockpile in its 1984 request. On most of these materials which we are discussing, particularly the four of which I spoke, there are adequate supplies currently available at reasonable prices, and this has led us up to now to consider continuing to purchase them rather than going to more costly domestic production.

However, that is dependent, of course, upon the continued availability of these supplies both for domestic reasons and in times of emergency from interference that might be engaged in against the transportation of these materials to the United States. Under the trade and development progran, we are working to diversify the sources of supply. We are funding feasibility studies on providing alternatives. In one of the studies, for instance, we are looking into the additional production of cobalt from Morocco, but of course, all of these overseas locations imply a freedom of movement to the United States which conceivably could not exist in time of war or grave emergency or internal disorder in those countries.

The trade and development program was created to provide alternative sources for the minerals which are essential to our national defense effort. We are working bilaterally with the United Kingdom, Canada, West Germany, and South Africa to develop information on production and consumption of nonfuel materials. We hope other countries will join in this effort, and we are also engaged in multilateral efforts with other international organizations and countries to look into this production, the increasing of production and availability.

Of course, of all the allied countries, as you pointed out in your statement, the United States is by far in the best position in the matter of availability with the possible exceptions of Canada or Australia, which do have very large mineral resources. The NATO allies and Japan are in a much worse position in this respect. You yourself gave out some very enlightening statistics on this in the case of Japan and it is just overwhelming.

We do have a stockpile of some $12.5 billion of these materials which may sound like a lot of money, but consumption rates in times of emergency are very large on these materials. The U.S.S.R. on the other hand, occupying as it does one sixth of the surface of the Earth and controlling, through friendly nations to it or via satellite nations, a still larger area, is in a position of almost total independence in the matter of strategic materials, and it has been willing to develop at enormous cost and in extremely remote areas internal resources and internal sources for these materials that would be difficult to do in a free enterprise society simply because it wishes to escape from any possible consequences of being dependent on someone on the outside.

France has begun an effort to stockpile in some measure, and the UK has announced its intention to do so. Germany has given some consideration to this in 1982, but it has dropped out of sight for the time-being. Perhaps the new government will evince greater interest in it. I don't know.

All of these that are in being, the French in particular, are much smaller than the United States because the U.S. stockpile is designed to cover a much longer emergency than their stockpiles are.

We also discussed investment policies with the Organization for Economic Cooperation and Development and to secure further sources outside and inside the United States. As with regard to U.S. investments in Southern Africa, the U.S. Government does not attempt to tell American companies where they should invest their stockholders' money. We do believe that there is a basic interest in developing sources of these strategic minerals which could become extremely short without any notice. We do believe that stability in the areas of production is extremely important to us, and it is why our policy has been to try to keep the Third World as quiet and free of conflict as possible. It is why we have made considerable effort to insure stability in Southern Africa. I myself have been to Angola twice in an attempt to work out a solution for the Namibian independence. A settlement would provide some peace and tranquility in this area which has been without it for a very long time and where there is, as you know, a very large Cuban presence which is the subject of considerable discussion at this time.

Someone once said Cuba is now the largest country in the world. The bureaucracy is in Havana. The government is in Moscow. The army is in Africa, and the population is in Florida—not strictly true, but indicative in some measure of the real situation there.

Some of the key suppliers in this area are, of course, Zaire and Zambia. So far we have very good relations with both of them. The Vice President has been to both of them recently. I myself have been to both countries several times, and we are attempting to maintain a stable flow.

Now Mozambique is quite important because through Mozambique comes a considerable amount of the supply of these minerals, through the Mozambiquan Port of Beira. The Mozambiquan Government has been up to now of declared Marxist-Leninist intent, but we do see some encouraging signs of a desire to diversify their contacts and operations with the Western World which we would like to encourage.

We think that throughout this whole Southern African area stability will be enhanced when all of the citizens are in a position to express their will and participate in a pluralistic society and a pluralistic form of government. Our experience has been that democracies very rarely engage in aggression against their neighbors. It generally takes one-party, dictatorial type of states to engage in this sort of thing, and therefore, we have a long-term interest in fostering democratic government in this area.

There are some exceptional cases, and in Angola you also have a government of basically Marxist-Leninist expression, but it does allow the operations of American oil companies in the area.

Now the purchases by the United States from these countries are very critical to their economies and here there is a tradeoff that we must consider between the continued purchase from these countries of certain vital strategic materials and again, we have to trade that off against the possibility that the access to these might be interrupted in some form or another. So far our experience has been good with both Zaire and Zambia. They have governments that are quite different in nature, but they have been willing to continue the flow of these materials to the United States.

Overall, I would say that we have to develop a policy that will both provide for reasonable prices in current purchases and also to safeguard ourselves against unforeseen circumstances which might arise. There are no immediate indications in the areas that are vital to us now, but nevertheless, no one can leave the security of their nation totally in the hands of someone else, so we bear a responsibility probably greater than any nation has borne in modern history.

If we fall, there is no one else to pick up the torch of freedom and no one knows how long the night that would follow our fall would last.

[The prepared statement of Ambassador Walters follows:]

## Statement of Hon. Vernon A. Walters, Ambassador-at-Large, Department of State

## GEOPOLITICS AND STRATEGIC MATERIALS

U.S. NATIONAL SECURITY IS HIGHLY DEPENDENT ON THE IMPORTATION OF STRATEGIC AND INDUSTRIAL MATERIALS PRODUCED IN SOUTHEAST ASIA, CENTRAL AND SOUTHERN AFRICA AND LATIN AMERICA. A MAJOR GOAL OF U.S. DIPLOMACY IS TO MAINTAIN ACCESS TO SUPPLIES OF HIGHLY CRITICAL STRATEGIC MATERIALS.

ACCESS TO RAW MATERIALS IS ONE OF THE USG INTERESTS WHICH MAKES IT ADVISABLE FOR THE U.S. AS WELL AS OTHER INDUSTRIALIZED COUNTRIES TO MANAGE NORTH-SOUTH RELATIONS IN SUCH A WAY AS TO PROTECT OUR IMPORTANT INTERESTS. CERTAINLY OTHER CONSIDERATIONS, SUCH AS HUMANITARIAN AND OTHER CONCERNS, ENTER INTO OUR POLICY FORMULATIONS WITH RESPECT TO LDCS, BUT WE CANNOT IGNORE THE EFFECT THAT SERIOUS DESTABILIZATION IN THE THIRD WORLD WOULD HAVE ON OUR INTERESTS, SUCH AS ACCESS TO RAW MATERIALS.

SINCE A NUMBER OF THE STRATEGIC MATERIALS FOR WHICH THE U.S. IS PARTICULARLY VULNERABLE TO SUPPLY DISRUPTION ARE LOCATED PRINCIPALLY IN SOUTHERN AND CENTRAL AFRICA, THAT REGION HAS BEEN A FOCUS OF CONCERN TO U.S. POLICY FOR MANY YEARS.

IN 1982, THE U.S. WAS MORE THAN 75 PERCENT RELIANT ON FOREIGN SOURCES FOR FOURTEEN STRATEGIC MATERIALS, INCLUDING FOUR OF THE MOST CRITICAL FOR DEFENSE NEEDS -- COBALT, CHROMIUM, MANGANESE AND THE PLATINUM-GROUP METALS. FOR THESE MINERALS IN PARTICULAR, THE SUPPLY AVAILABILITY CONCERN IS GREAT BECAUSE OF THE RELATIVELY SMALL NUMBER OF SUPPLIERS AND THEIR CONCENTRATION IN SOUTHERN AND CENTRAL AFRICA AND THE SOVIET UNION.

The U.S. imported processed nonfuel minerals worth $25 billion in 1982; this is one-third more than the value of processed materials we exported. Thus, the U.S. is dependent on foreign sources not only for raw materials, but for processed materials as well. Our growing reliance on foreign processed materials benefits both developed and developing nations.

## Programs the U.S. Has Developed to Mitigate the Effects of Supply Disruption

### 1. The President's Report to Congress

The Cabinet Council on Natural Resources and Environment was vested by President Reagan with responsibility to coordinate strategic materials policy. The Cabinet Council drafted the President's National Materials and Minerals Program Plan and Report to Congress, submitted in April 1982. This report is evidence of concern at the highest levels of government regarding the problem of dependence on foreign sources of supply for strategic and critical materials. The report endorses the concept of the National Defense Stockpile and mandates its restructuring to meet its goals.

The President's Report also describes efforts by the government to increase the statistical base on mineral production and consumption by other countries, through cooperative government-to-government efforts, better use of facilities of the various international organizations, and the State Department's Regional Resource Officer Program. The RRO

PROGRAM INCLUDES TEN OFFICERS STATIONED IN KEY MINERAL PRODUCING COUNTRIES WHO MONITOR PRODUCTION, INVESTMENT AND MARKETING POLICIES. IN THE PAST YEAR, THE DEPARTMENT HAS MADE FULL USE OF THESE MECHANISMS TO BROADEN OUR KNOWLEDGE OF MINERAL AND STOCKPILING POLICIES OF OTHER COUNTRIES, AS WELL AS TO HEIGHTEN INTERNATIONAL AWARENESS OF THE THREAT OF SUPPLY DISRUPTION, IN AN EFFORT TO MINIMIZE POSSIBLE DISASTROUS EFFECTS.

### 2. THE NATIONAL DEFENSE STOCKPILE

THE LARGEST GOVERNMENT PROGRAM IN TERMS OF VALUE AND SCOPE IS THE NATIONAL DEFENSE STOCKPILE. THE STRATEGIC AND CRITICAL MATERIALS STOCK PILING ACT OF 1979 STIPULATED THAT GOALS FOR MATERIALS HELD IN THE STOCKPILE REFLECT ESSENTIAL CIVILIAN AND DEFENSE NEEDS FOR A WAR OR OTHER NATIONAL EMERGENCY OF NOT LESS THAN THREE YEARS' DURATION. AT PRESENT, THE STOCKPILE INCLUDES 69 MATERIALS IN 93 FORMS. SINCE THE STOCK PILING ACT FURTHER STIPULATES THAT THE STOCKPILE CANNOT BE USED FOR "ECONOMIC" ENDS, THE STOCKPILE IS NOT INTENDED TO TAKE THE PLACE OF RAW MATERIAL INVENTORIES HELD BY THE PRIVATE SECTOR. BASICALLY, THE STOCKPILE CAN BE VIEWED AS INSURANCE AGAINST A MAJOR EMERGENCY. NATURALLY, THE PROBLEM OF MID- TO LONG-TERM CONCERN OF SUPPLY AVAILABILITY MUST BE ADDRESSED THROUGH A BROAD RANGE OF POLICIES.

### 3. DEFENSE PRODUCTION ACT

THE DEFENSE PRODUCTION ACT TITLE III PROVIDES A MEANS OF SUBSIDIZING DOMESTIC INDUSTRY TO PRODUCE STRATEGIC MATERIALS

IN SITUATIONS WHERE DOMESTIC PRODUCTION IS NOT COMMERCIALLY VIABLE AND WHERE IT IS MORE COST EFFECTIVE THAN STOCKPILE PURCHASES. EXTENSIVE USE WAS MADE OF THIS PROGRAM DURING THE KOREAN CONFLICT AND THE VIETNAM WAR AND IT REMAINS AN OPTION FOR FUTURE SUPPLY UNCERTAINTIES. THE ADMINISTRATION HAS REQUESTED FUNDING OF $200 MILLION FOR TITLE III PROJECTS IN THE FY 84 PRESIDENT'S BUDGET.

SINCE ADEQUATE FOREIGN SUPPLIES FOR MOST STRATEGIC MATERIALS ARE CURRENTLY AVAILABLE AT REASONABLE PRICES, IT IS MORE COST EFFECTIVE TO RELY ON THE FREE MARKET RATHER THAN FUND A PROGRAM PROVIDING A COSTLY SUBSIDY FOR OTHERWISE NON-COMPETITIVE DOMESTIC PRODUCTION.

## 4. TRADE AND DEVELOPMENT PROGRAM

ANOTHER TACK TO TAKE IN AVOIDING THE HARMFUL EFFECTS OF SUPPLY DISRUPTION IS TO DIVERSIFY SOURCES OF SUPPLY. THROUGH THE TRADE AND DEVELOPMENT PROGRAM, A SISTER AGENCY OF THE AGENCY FOR INTERNATIONAL DEVELOPMENT, WE ARE FUNDING FEASIBILITY STUDIES IN COUNTRIES WITH RELATIVELY LIMITED SOURCES OF SUPPLY FOR HIGHLY CRITICAL STRATEGIC MATERIALS IN AN EFFORT TO PROVIDE ALTERNATIVES TO THE MAJOR SUPPLIERS. TDP HAS ALREADY FUNDED FEASIBILITY STUDIES FOR EXPANDED COBALT PRODUCTION IN MOROCCO, PROCESSING OF COBALT CONTAINED IN STEEL MILL TAILINGS IN PERU, AND DEVELOPMENT OF CHROMIUM MINES IN THE PHILIPPINES. THE TDP HAS GREATLY FURTHERED EFFORTS TO DEVELOP ALTERNATIVE SOURCES OF SUPPLY FOR THESE HIGHLY CRITICAL MATERIALS IN PARTS OF THE WORLD WHERE SUPPLY DISRUPTION

PROBLEMS ARE LESS SEVERE THAN IN SOUTHERN AFRICA. TDP'S EFFORTS ARE AIMED AT IDENTIFYING NEW RESOURCES WHICH COULD BE DEVELOPED COMMERICALLY BY THE U.S. AND HOST COUNTRY PRIVATE SECTORS.

5. U.S. BILATERAL EFFORTS

THE BUREAU OF MINES AND THE GEOLOGICAL SURVEY HAVE ENTERED INTO FORMAL COOPERATIVE RELATIONSHIPS WITH THE GOVERNMENTS OF CANADA, THE UNITED KINGDOM, WEST GERMANY, AND SOUTH AFRICA TO SHARE AND DEVELOP INFORMATION ON PRODUCTION AND CONSUMPTION OF NONFUEL MINERALS IN AN EFFORT TO STANDARDIZE SUCH INFORMATION AND TO BROADEN THEIR MUTUAL STATISTICAL BASE TO INCLUDE AS MANY OF THE MINERALS PRODUCING AND CONSUMING COUNTRIES AS POSSIBLE. IN TIME, IT IS HOPED THAT OTHER COUNTRIES WILL JOIN THIS EFFORT TO ASSIST IN MAKING MORE AND HIGHER QUALITY DATA AVAILABLE TO GOVERNMENT DECISION MAKERS.

6. MULTILATERAL EFFORTS

THROUGH OUR PARTICIPATION IN THE ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, HIGH LEVEL GROUP ON COMMODITIES, THE U.S. HAS BEEN INSTRUMENTAL IN INITIATING AN OECD SURVEY OF THE EFFORTS MADE BY OTHER MEMBER COUNTRIES TO DEVELOP THEIR OWN STRATEGIC STOCKPILES ON CRITICAL MATERIALS. ALSO, AS A RESULT OF U.S. EFFORTS, THE SUBGROUP OF INVESTMENTS HAS UNDERTAKEN STUDIES OF THE PROBLEM OF INVESTMENT IN MINERAL PRODUCTION, AS WELL AS OTHER FACTORS WHICH AFFECT THE LONG-TERM SUPPLY OF STRATEGIC MATERIALS. WE ARE CONFIDENT THAT THESE EFFORTS WILL PAY OFF IN HEIGHTENED CONCERN AMONG

OECD MEMBER GOVERNMENTS ABOUT BARRIERS TO INVESTMENT IN DEVELOPING COUNTRIES. THE FREE FLOW OF INVESTMENT AND TRADE AND THE OPEN OPERATION OF THE FREE MARKET, ARE THE BEST MECHANISMS FOR EXPANDING WORLD TRADE AND ASSURING RAW MATERIALS SUPPLIES.

## HOW THE U.S., THE ALLIES AND THE SOVIET UNION COMPARE IN TERMS OF DEPENDENCE ON FOREIGN SOURCES OF SUPPLY FOR STRATEGIC MATERIALS

ALTHOUGH THE U.S. REMAINS SELF-SUFFICIENT OR NEARLY SO IN MOST INDUSTRIAL RAW MATERIALS, FOR AN IMPORTANT NUMBER OF MATERIALS HIGHLY IMPORTANT TO NATIONAL DEFENSE THE U.S. IS HIGHLY DEPENDENT ON FOREIGN SOURCES OF SUPPLY. WITH THE POSSIBLE EXCEPTION OF CANADA AND AUSTRALIA, BOTH OF WHICH HAVE CONSIDERABLE MINERAL RESOURCES, MOST OF THE NATO COUNTRIES AND JAPAN ARE MUCH MORE DEPENDENT THAN WE ARE ON FOREIGN SOURCES FOR AN EVEN GREATER NUMBER OF STRATEGIC MATERIALS. BY CONTRAST, THE SOVIET UNION REMAINS SELF-SUFFICIENT IN ALMOST EVERY IMPORTANT STRATEGIC MATERIAL. THE SOVIETS HAVE VAST SUPPLIES OF MINERALS AND HAVE BEEN WILLING TO DEVELOP THEIR RESERVES AT ENORMOUS ECONOMIC COST IN ORDER TO AVOID A SITUATION OF IMPORT DEPENDENCE. BY CONTRAST, THE U.S. HAS ESTABLISHED AN EXTENSIVE COST EFFECTIVE STOCKPILE OF STRATEGIC AND CRITICAL MATERIALS. THIS STOCKPILE CONTAINS $12.5 BILLION IN ASSETS INCLUDING COBALT, CHROMITE, MANGANESE AND THE PLATINUM GROUP MINERALS TO INSURE AGAINST THE ADVERSE CONSEQUENCE OF RELIANCE.

## PROGRAMS OTHER WESTERN COUNTRIES HAVE DEVELOPED TO REDUCE THE EFFECTS OF SUPPLY DISRUPTION

IN ADDITION TO THE COOPERATIVE EFFORTS IN EXPANDING INFORMATION ON MINERALS PRODUCTION AND IN STUDYING WAYS TO IMPROVE THE CLIMATE FOR MINERALS INVESTMENT, WHICH HAVE ALREADY BEEN DESCRIBED, SOME OF THE OTHER OECD COUNTRIES HAVE BEGUN THEIR OWN STOCKPILE PROGRAMS. SWEDEN AND SWITZERLAND HAVE ENACTED PUBLIC AND PRIVATE SECTOR PROGRAMS TO STOCK STRATEGIC MATERIALS. FRANCE HAS MADE AN EFFORT TO BUILD UP STRATEGIC STOCKS AND THE U.K. RECENTLY ANNOUNCED A POLICY TO DO SO AS WELL. WEST GERMANY REPORTEDLY CONSIDERED A STOCKPILING PROGRAM IN 1982, BUT REJECTED THE PLAN ON BUDGETARY GROUNDS. JAPAN HAS EXPANDED ITS PARTIALLY GOVERNMENT-SUPPORTED PRIVATE SECTOR STOCIPILE OF RARE MATERIALS. ALL THESE STOCKPILES HAVE CONSIDERABLY SMALLER GOALS AND ENCOMPASS FEWER MATERIALS THAN THE U.S. WHICH SEEKS TO PROTECT AGAINST DISRUPTION OVER A THREE-YEAR WAR.

## ACTIONS THE U.S. HAS TAKEN TO FURTHER INTERNATIONAL INVESTMENT IN MINERALS PRODUCTION

THE U.S. HAS INITIATED DISCUSSIONS WITHIN THE OECD ON THE NEED TO ASSURE ADEQUATE INVESTMENT IN MINERALS PRODUCTION TO MEET ANTICIPATED FUTURE NEEDS. ORGANIZATIONS SUCH AS THE OECD, THE WORLD BANK, AND THE REGIONAL DEVELOPMENT BANKS HAVE STUDIED VARIOUS ASPECTS OF THE INVESTMENT PROBLEM, INCLUDING BARRIERS WHICH PRODUCING COUNTRIES MSY ERECT TO DISCOURAGE PRIVATE FOREIGN INVESTMENT. THE U.S. IS CONCERNED THAT PRIVATE FIRMS

CONTINUE TO BE PERMITTED TO MAKE MINERALS-RELATED INVESTMENTS IN FOREIGN COUNTRIES; FACILITATING SUCH INVESTMENT IS A MAJOR THRUST OF OUR DIPLOMATIC EFFORTS IN MANY MINERAL PRODUCING COUNTRIES.

## GOVERNMENT POLICY REGARDING ENCOURAGING NEW INVESTMENT BY U.S. FIRMS IN SOUTH AFRICA'S MINERALS INDUSTRY TO ENSURE CONTINUED ACCESS TO THE COUNTRY'S ABUNDANT SOURCES OF STRATEGIC MATERIALS

CONSISTENT WITH OUR WORLDWIDE INVESTMENT POLICY, THE UNITED STATES NEITHER ENCOURAGES NOR DISCOURAGES INVESTMENT BY AMERICAN COMPANIES OVERSEAS, INCLUDING THE MINERALS INDUSTRY. THERE HAS BEEN NO EVIDENCE THAT THIS POLICY HAS IN ANY WAY AFFECTED OUR ACCESS TO SOUTH AFRICA'S STRATEGIC MINERALS. THOSE U.S. COMPANIES WHICH DECIDE THAT INVESTMENT IN THE SOUTH AFRICAN MINERALS INDUSTRY IS A PROPER COMMERCIAL VENTURE ARE FREE TO PURSUE THEIR INTERESTS. IT IS FOR THEM TO DECIDE WHERE TO INVEST THEIR STOCKHOLDERS' MONEY.

POLITICAL AND ECONOMIC STABILITY IN SOUTH AFRICA IS OUR BEST INSURANCE AGAINST HARMFUL DISRUPTIONS IN THE SUPPLY OF CRITICAL MATERIALS FROM THAT COUNTRY. TRUE STABILITY CAN ONLY BE ATTAINED WHEN ALL PEOPLE OF SOUTH AFRICA ARE ALLOWED TO EXERCISE THEIR LEGITIMATE POLITICAL AND ECONOMIC RIGHTS. THROUGH OUR POLICY OF CONSTRUCTIVE ENGAGEMENT WITH SOUTH AFRICA, WE ARE HELPING TO FOSTER PEACEFUL CHANGE IN THIS DIRECTION AS BEST WE CAN.

## OUR POLICY TOWARD THE MINERALS PRODUCING COUNTRIES OF CENTRAL AFRICA, IN PARTICULAR ZAIRE AND ZAMBIA

THE STATE OF BILATERAL RELATIONS BETWEEN THE U.S. AND ZAMBIA ARE QUITE GOOD, HAVING RECEIVED A BOOST FROM VICE

PRESIDENT BUSH'S VISIT TO LUSAKA LATE LAST YEAR AND PRESIDENT KAUNDA'S WASHINGTON MEETING WITH PRESIDENT REAGAN IN EARLY APRIL 1983. THE U.S. CONTINUES TO PURSUE POLICIES WHICH CONTRIBUTE TO CONTINUED STABILITY WITHIN ZAMBIA, MAINTAIN OUR ACCESS TO ZAMBIAN RESERVES OF STRATEGIC MINERALS, AND PROTECT INVESTMENTS OF U.S. FIRMS IN MINING AND OTHER IMPORTANT SECTORS OF THE ZAMBIAN ECONOMY. OUR AID PROGRAM IS DESIGNED TO FURTHER THESE OBJECTIVES.

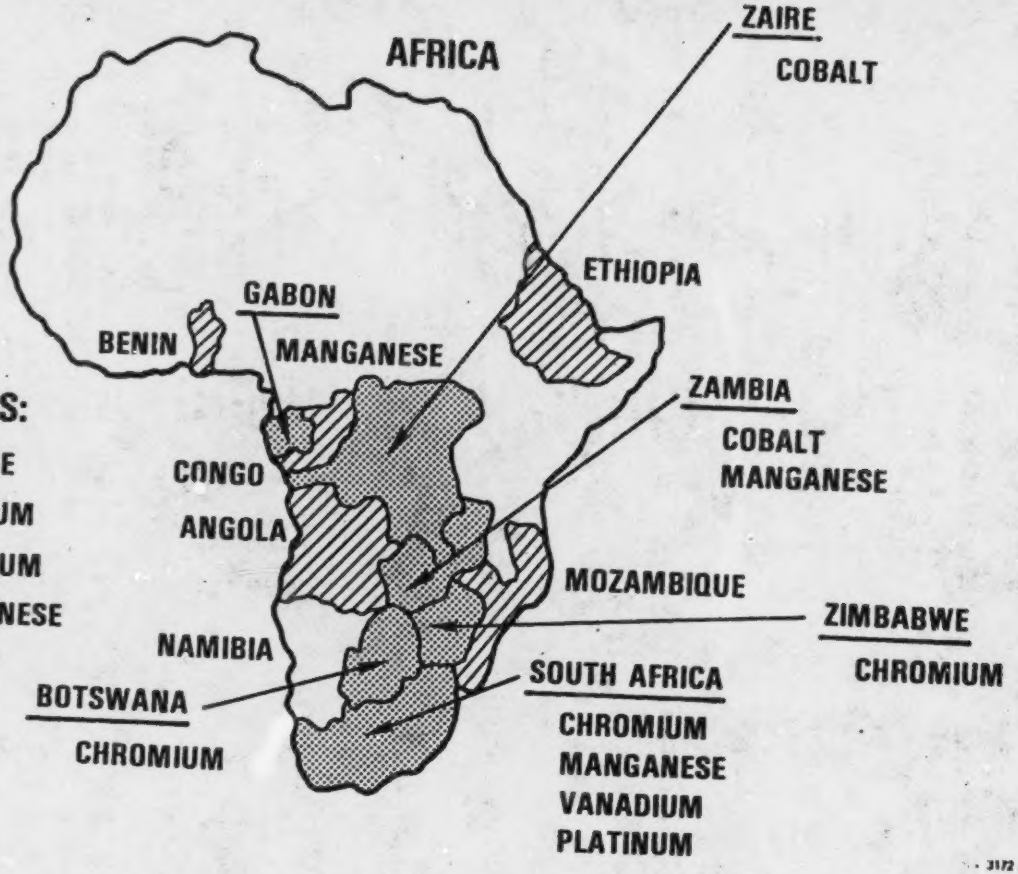
BILATERAL RELATIONS BETWEEN THE U.S. AND ZAIRE ARE NOW GOOD. VICE PRESIDENT BUSH'S VISIT TO KINSHASA IN NOVEMBER, MEETINGS IN WASHINGTON IN DECEMBER WITH A HIGH-LEVEL ZAIRIAN ECONOMIC DELEGATION, AND THE CONCURRENT VISITS TO KINSHASA OF STATE AND DEFENSE DEPUTY ASSISTANT SECRETARIES IN FEBRUARY SEEM TO HAVE REASSURED THE GOZ THAT THE USG GENUINELY IS SUPPORTIVE OF ITS EFFORTS TO REFORM ITS PUBLIC ADMINISTRATION AND BRING ITS BUDGET UNDER CONTROL. GIVEN THE ENORMITY OF ZAIRE'S REQUIREMENTS FOR ECONOMIC RECOVERY, THE USG HAS TAKEN THE POSITION THAT THE BEST WAY TO PROMOTE THE STABILITY OF A RELIABLY PRO-WESTERN GOVERNMENT IN ZAIRE AND TO ENSURE OUR ACCESS TO ITS STRATEGIC MINERALS IS THROUGH MULTILATERAL VEHICLES SUCH AS AN IMF STABILIZATION PROGRAM. OUR AID PROGRAM IS DESIGNED TO ASSIST IN THE CREATION OF AN INDIGENOUS DEVELOPMENTAL INFRASTRUCTURE AND TO CUSHION THE SHOCKS OF THE DIFFICULT POLICY MEASURES WE AND THE IMF HAVE URGED THE GOZ TO TAKE, AS PREREQUISITES TO ECONOMIC STABILIZATION AND GROWTH.

The Soviet Union has done its best to gain a foothold in southern Africa. Advisers from the USSR and its allies play prominent roles in the two bookends of southern Africa, Angola and Mozambique, although Mozambique has recently exhibited signs that it might begin to play a more independent role in international affairs. Through carefully designed programs of economic and security assistance, we hope to give the friendly countries of southern Africa the strength and self-confidence to resist any attempts by the USSR to expand its influence in the region.

The central and southern African area has a special position as a source of mineral supplies for the West, inasmuch as this region accounts for a major portion of western supplies of a few minerals that are essential for industrial and defense-related production in the United States and allied countries. It is therefore prudent that we continue to scrutinize closely Soviet activities in this region which might jeopardize a continuing supply of essential minerals.

▨ HEAVY USSR INFLUENCE

▩ HIGHLY MINERALIZED
NOT CONTROLLED
BY USSR


AFRICA
ZAIRE
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MANGANESE
BENIN
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ZAMBIA
COBALT
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CONGO
ANGOLA
MOZAMBIQUE
ZIMBABWE
CHROMIUM
NAMIBIA
SOUTH AFRICA
CHROMIUM
MANGANESE
VANADIUM
PLATINUM
BOTSWANA
CHROMIUM

## THE AREA OF SOUTHERN AFRICA HAS:

95% OF THE WORLD'S CHROME
86% OF THE WORLD'S PLATINUM
64% OF THE WORLD'S VANADIUM
53% OF THE WORLD'S MANGANESE
52% OF THE WORLD'S COBALT

OPEC CONTROLS 52%
OF THE WORLD'S OIL

3172 3

## U.S. NET IMPORT RELIANCE 1/ OF METALS AND MINERALS AS A PERCENT OF APPARENT CONSUMPTION 2/

(In percent. Based on net imports of metals, minerals, ores, and concentrates.)

| Metals and Minerals | 1980 | 1981 | 1982 e/ | Major Foreign Sources (1978-1981) |
|---|---|---|---|---|
| Magnesium | E | E | E | Netherlands, Canada, Norway, Italy |
| Magnesium compounds | E | E | E | Ireland, Greece, Japan, India |
| Manganese | 98 | 98 | 99 | Ore: Gabon, Rep. of South Africa, Australia, Brazil<br>Ferromanganese: Rep. of South Africa, France |
| Mercury | 26 | 44 | 43 | Spain, Japan, Italy, Algeria |
| Mica (natural) sheet | 100 | 100 | 100 | India, Brazil, Madagascar |
| Mica (natural) scrap flake | E | E | E | Canada, India, Brazil |
| Molybdenum | E | E | E | Canada, Chile |
| Nickel | 71 | 68 | 75 | Canada, Norway, Botswana, Australia |
| Nitrogen (fixed) | 9 | 7 | 9 | U.S.S.R., Canada, Mexico, Trinidad and Tobago |
| Peat | 35 | 31 | 31 | Canada, Fed. Rep. of Germany |
| Perlite | E | E | E | None |
| Phosphate rock | E | E | E | Morocco, Netherlands Antilles, Mexico |
| Platinum-group metals | 88 | 83 | 85 | Rep. of South Africa, U.S.S.R., United Kingdom |
| Potash | 65 | 65 | 71 | Canada, Israel |
| Pumice & pumicite | 26 | 15 | 15 | Greece, Italy |
| Quartz crystal-industrial | NA | NA | NA | Brazil |
| Rare-earth metals | NA | NA | NA | Monazite: Australia, Malaysia, Thailand |
| Rhenium | W | W | W | Chile, Fed. Rep. of Germany |
| Rubidium | NA | NA | NA | Canada |
| Rutile | W | W | W | Australia, Rep. of South Africa, Sierra Leone |
| Salt | 7 | 8 | 8 | Canada, Mexico, Bahamas |
| Sand and gravel | E | E | E | Canada |
| Selenium | 59 | 49 | 50 | Canada, Japan, Fed. Rep. of Germany, United Kingdom |
| Silicon | 8 | 17 | 20 | Canada, Norway, Brazil, Rep. of South Africa |
| Silver | 7 | 53 | 59 | Canada, Mexico, United Kingdom |
| Sodium carbonate | E | E | E | Canada |
| Sodium sulfate | 7 | 8 | W | Canada, United Kingdom |
| Stone (crushed) | - | - | - | Canada, Bahamas |
| Stone (dimension) | 12 | 18 | 20 | Italy, Canada, Mexico |
| Strontium | 100 | 100 | 100 | Mexico |
| Sulfur | 14 | 5 | 3 | Canada, Mexico |
| Talc and pyrophyllite | E | E | E | Italy, France, Canada |
| Tantalum | 90 | 92 | 90 | Thailand, Canada, Malaysia, Brazil |
| Tellurium | W | W | W | Canada, Fiji, Hong Kong, Peru |
| Thallium | W | W | W | Fed. Rep. of Germany, Bel.-Lux., Japan |
| Thorium | NA | NA | NA | France, Canada, Netherlands, Malta |
| Tin | 79 | 77 | 72 | Malaysia, Thailand, Bolivia, Indonesia |
| Titanium (metal) | W | W | W | Japan, China, U.S.S.R., United Kingdom |
| Tungsten | 53 | 50 | 48 | Canada, Bolivia, China, Thailand |
| Vanadium | 35 | 34 | 14 | Rep. of South Africa, Chile, Canada |
| Vermiculite | E | E | E | Rep. of South Africa |
| Yttrium | W | W | W | Monazite: Australia, Malaysia, Thailand<br>Xenotime: Malaysia, Australia<br>Yttrium concentrate: Malaysia, Canada, Japan |
| Zinc | 60 | 64 | 53 | Ore & Concentrates: Canada, Peru, Mexico<br>Metal: Canada, Spain, Mexico, Australia |
| Zirconium | W | W | W | Zirconium: France, Japan, Canada<br>Zircon: Australia, Rep. of South Africa |

e/ Estimated.
E Net exports.
W Withheld.
NA Not available.
- None.

1/ Net import reliance = imports - exports + adjustments for Government and industry stock changes.

2/ Apparent consumption = U.S. primary + secondary production + net import reliance.

## U.S. NET IMPORT RELIANCE 1/ OF METALS AND MINERALS AS A PERCENT OF APPARENT CONSUMPTION 2/

(In percent. Based on net imports of metals, minerals, ores, and concentrates.)

| Metals and Minerals | 1980 | 1981 | 1982 e/ | Major Foreign Sources (1978-1981) |
|---|---|---|---|---|
| Aluminum (metal) | E | E | 4 | Canada, Ghana, Norway, Japan |
| Antimony | 48 | 48 | 45 | Metal: Bolivia, China, Mexico, Bel.-Lux.<br>Ores: Bolivia, Canada, Mexico, Chile<br>Oxide: Rep. of South Africa, China, France, Bolivia |
| Arsenic | W | W | W | Sweden, Mexico, France |
| Asbestos | 78 | 78 | 74 | Canada, Rep. of South Africa. |
| Barite | 44 | 40 | 52 | China, Peru, Chile, Morocco |
| Bauxite and alumina | 94 | 94 | 97 | Bauxite: Jamaica, Guinea, Suriname<br>Alumina: Australia, Jamaica, Suriname |
| Beryllium | W | W | W | Brazil, China, India, Argentina |
| Bismuth | W | W | W | Mexico, Peru, United Kingdom, Fed. Rep. of Germany |
| Boron | E | E | E | Colemanite and ulexite: Turkey |
| Bromine | E | E | E | Israel, Netherlands, France, United Kingdom |
| Cadmium | 55 | 64 | 69 | Canada, Australia, Mexico, Rep. of Korea |
| Cement | 6 | 4 | 3 | Canada, Japan, Mexico, Spain |
| Cesium | NA | NA | NA | Pollucite: Canada<br>Compounds, including cesium chloride: Fed. Rep. of Germany, United Kingdom, Canada, France |
| Chromium | 91 | 90 | 88 | Chromite: Rep. of South Africa, U.S.S.R., Philippines<br>Ferrochromium: Rep. of South Africa, Yugoslavia, Zimbabwe, Brazil |
| Clays | E | E | E | United Kingdom, Canada, Fed. Rep. of Germany, Mexico |
| Cobalt | 93 | 92 | 91 | Zaire, Zambia, Bel.-Lux., Finland |
| Columbium | 100 | 100 | 100 | Brazil, Canada, Thailand |
| Copper | 14 | - | 7 | Chile, Canada, Peru, Zambia |
| Corundum | 100 | 100 | 100 | Rep. of South Africa |
| Diamond (industrial stone) | 100 | 100 | 100 | Rep. of South Africa, Zaire, Bel.-Lux. |
| Diamond (bort, powder, dust) | E | E | E | Ireland, Rep. of South Africa, Bel.-Lux., Japan |
| Diatomite | E | E | E | Mexico, Canada |
| Feldspar | E | E | E | Canada, Norway, Sweden |
| Fluorspar | 87 | 83 | 87 | Mexico, Rep. of South Africa, Italy, Spain |
| Gallium | 56 | 56 | 61 | Switzerland, Canada, Fed. Rep. of Germany, China |
| Garnet | E | E | E | None |
| Gem stones | 100 | 100 | 100 | Rep. of South Africa. Bel.-Lux., Israel, India |
| Germanium | NA | NA | NA | Bel.-Lux., Fed. Rep. of Germany, China, Switzerland |
| Gold | 18 | 15 | 43 | Canada, U.S.S.R., Switzerland (mostly Rep. of South Africa origin) |
| Graphite (natural) | 100 | 100 | 100 | Mexico, Rep. of Korea, Madagascar, China |
| Gypsum | 35 | 37 | 36 | Canada, Mexico, Spain |
| Hafnium | W | W | W | Negligible |
| Helium | E | E | E | None |
| Ilmenite | 32 | 54 | 72 | Australia, Canada, Rep. of South Africa |
| Indium | NA | NA | NA | Bel.-Lux., Peru, Japan, United Kingdom |
| Iodine | W | W | W | Japan, Chile |
| Iron ore | 25 | 22 | 36 | Canada, Venezuela, Brazil, Liberia |
| Iron and steel | 15 | 13 | 22 | Europe, Japan, Canada |
| Iron and steel scrap | E | E | E | Canada |
| Iron and steel slag | NA | NA | NA | Not available |
| Kyanite & related minerals | E | E | E | Not available |
| Lead | E | 1 | 1 | Canada, Mexico, Peru, Australia |
| Lime | 2 | 2 | 2 | Canada, Mexico |
| Lithium | E | E | E | Insignificant |

The **Chairman**. Thank you very much, Mr. Ambassador. Before proceeding with questions, I might ask Senator Murkowski if he has a statement he would like to make for the record?

## STATEMENT OF HON. FRANK H. MURKOWSKI, A U.S. SENATOR FROM THE STATE OF ALASKA

Senator **Murkowski**. Thank you very much, Mr. Chairman. I certainly want to commend you for scheduling these hearings, and I think that you as much as any other Member of the Senate is certainly aware of the potential for our Nation of the disaster inherent in our dependence in that we are so dependent, as the Ambassador stated, on imports of vital strategic minerals.

While the oil crisis of the seventies has made eminently clear our vulnerability to the cutoff of oil, the American people and Congress have yet to recognize how similar the potential for calamity is in the area of strategic minerals and metals.

Mr. Chairman, I have a rather lengthy opening statement. I am not going to read it all, but I would like to point out that in the context of the strategic minerals, the potential contribution of my particular State to the mineral needs of our Nation is truly enormous. Of the 29 currently identified strategic and critical minerals, Alaska has development potential for 18 of these 29, including chromium, cobalt, manganese, and platinum which are considered to be most critical to our needs.

Mr. Chairman, I would ask unanimous consent to insert at an appropriate point in the hearing record a brief description of the resource potential in Alaska for strategic minerals.

The **Chairman**. Without objection, it is so ordered.

Senator **Murkowski**. And I would ask, Mr. Chairman, unanimous consent that the balance of my opening statement be inserted in the record, and I thank you.

The **Chairman**. Thank you very much, Senator.

[The prepared statement of Senator Murkowski follows:]

Statement of Senator Frank H. Murkowski
before the
Committee on Energy and Natural Resources
United States Senate

May 19, 1983

I want to begin by commending the Chairman for scheduling these hearings. He, as much if not more than any member of the Senate, is acutely aware of the potential for disaster inherent in American dependence on imports of vital strategic minerals such as cobalt, chromium, manganese and platinum. While the oil crises of the 1970's made eminently clear our vulnerability to a cutoff of oil, the American people and the Congress have yet to recognize how similar the potential for calamity is in the area of strategic minerals and metals.

Since the end of the Second World War the United States has grown increasingly dependent on foreign sources for essential minerals and metals. Much of last year's nonfuel mineral imports totalling $25 billion came from sources located in some of the most volatile regions of the world

An appraisal of our strategic mineral vulnerability quickly focuses our attention on Africa, and especially on Zimbabwe, Angola, Mozambique and the Republic of South Africa. Stability in this part of the world is considered by many to be the key to continued availability of strategic and critical minerals. A dangerous trend in some of these countries has been the shifting of control of their resources from private to state control. This will create centralized government trading corporations that could exercise an OPEC-like control over their exports.

In stark contrast to the United States, the Soviet Union is virtually independent of imports. It is self-sufficient in all but six major minerals, and even for these it is believed that the Russians produce at least half of their internal needs. We should anticipate that the Soviet Union will take an increasingly large share of the market for both oil and non-fuel minerals in the future. For the short term, fortunately, their technology and infrastructure requirements together with high costs should delay development.

The potential for effective Soviet or Third World manipulation of the world's strategic mineral supply can be reduced only if western nations develop their indigenous strategic mineral sources, diversify their import sources, and stock pile their reserves. America will never be self-sufficient in all minerals. But we would be foolish not to develop what we have.

In this context, the potential contribution of my State of Alaska to our mineral needs is enormous.

Of the 29 currently identified strategic and critical minerals, Alaska has development potential for 18, including foru--chromium, cobalt, manganese and the platinum-group metals--which are considered most critical to our needs.

/Mr. Chairman, I ask unanimous consent to insert at an appropriate point in the hearing record a brief description of the resource potential in Alaska for these minerals./

Alaska ranks as one of the highest potential sources for tin and tungsten in the U.S. The State may have among the largest domestic reserves of chromite, nickel and platinum, as well as a high probability for significant cobalt discoveries. Significant discoveries of copper and molybdenum are currently under consideration for development. The still incomplete U.S. Borax explorations have verified reserves of 700 million tons of ore. And finally, discoveries of lead, zinc, silver, uranium, and gold indicate much larger reserves still in the ground.

Serious obstacles still remain in the development of Alaska's mineral resources. An accurate determination of that potential is still lacking. Even for the known reserves, difficulties of topography, weather, and distance from labor sources and markets engender huge development costs.

Eighty different federal laws administered by twenty different federal agencies regulate Alaska's public lands. Withdrawals of some of these lands from mineral exploration have locked up some of Alaska's potentially most extensive mineralized areas. If we are to fully explore and evaluate these lands for their mineral potential we will have to streamline the regulatory compliance process and implement reasonable policy and regulation changes.

Alaska is this country's natural resource bank. There is a national need to develop the resources we have stored in our State. The Congress must work with the President, the Secretary of the Interior, and the State of Alaska to move forward in developing the strategic and critical mineral resources Alaska has in such abundance.

The rehabilitation of our domestic mining industries, and attainment of self-sufficiency will require policy and legislative changes in several areas. But if the United States expects to maintain its economic strength, to meet tomorrow's international challenges, and to improve the quality of life of its citizens, it must develop an effective strategic minerals policy. Despite the hard lessons we are still learning from our dependence on foreign sources of energy, little attention has been paid to the dangers inherent in our non-fuel mineral dependence. I commend the Chairman for the timely scheduling of these hearings.

Thank you, Mr. Chairman.

## Alaska Potential for Strategic Minerals

Of the 29 currently identified strategic and critical minerals, Alaska has development potential for 18, including four -- chromium, cobalt, manganese, and the platinum-group metals -- which are considered most critical to our needs. Below is a brief description of U.S. needs for these four groups and Alaska's potential for their development.

### Chromium

The United States is a major consumer of chromium. We currently import 92% of our supplies from South Africa, the Soviet Union, and Zimbabwe. Known chromite reserves exist in Alaska at Baranof Island, at Red Mountain and Clam Point on the Kenai Penninsula near Seldovia and in five areas near Eklutna, north of Anchorage. Recent exploration has discovered significant chromite occurences in several locations across the State. Disappointingly, some of these areas have been withdrawn from mineral entry.

### Cobalt

Because of its tensile strength and high melting point, cobalt has become a premium "space age" mineral. It is used for super alloys in gas turbine engines, aircraft, in military projectiles and tool bits. We obtain 90% of our needs from Zaire and Zambia, both of which have been subject to severe political disruptions through the 70's. Alaska contains about two dozen occurences of cobalt, most of which are associated with nickel-copper-cobalt sulfides in South Central and South Eastern Alaska. The Noranda Company operations on Admiralty Island will be a source of this material and is close to development.

### Manganese

Manganese is essential for the production of steel. It is primarily used to remove oxygen and sulfur from the melt. There are no satisfactory substitutes. We currently import 98% of our needs. Our principal sources have been the Soviet Union and South Africa. The biggest potential manganese resource will eventually be from manganese nodules harvested from the ocean floor. However, international legal complications involving the Law of the Sea and other concerns will first need to be resolved. Manganese deposits have been reported near Nome and in the North-Central Alaska Range from the Wood River to the Kantishna Hills as well as in the Nation River area of East Central Alaska north of Eagle.

### Platinum-Group Metals

These metals occur together in nature and are important as catalysts in the chemical, petroleum refining and auto industries. They are also used for their corrosion resistance and alloys in jet engines. We currently import 89% of our needs, primarily from the Republic of South Africa and the USSR. Alaska has a lengthy history of platinum production at Goodnews Bay in Southwestern Alaska where significant recoverable reserves of platinum group metals occur in association with and as a by-product of other mineral development, especially placer gold mining. A major deposit was prohibited from development by Federal intervention in the previous Administration. The Bradley Glacier, located in Glacier Bay National Monument, is one of the country's largest platinum deposits. It is a valid and existing claim but due to a tentative department of the interior study it was barred from having a mill site at the claim. The mine is not in Glacier Bay and cannot be seen from the routes normally travelled by visitors to the Park.

The **Chairman**. Mr. Ambassador, one of the things I think we need to look to is the long-term effects as well as the short-term effects of disruptions.

As I recall the experience of the U.S. metals industry, the trends in U.S. metals industry were both established and accentuated because of our foreign policy that was directed toward Rhodesia at the time of our economic embargo. Rhodesia was the source of our chrome that was then utilized in our ferrochrome industry which was a relatively substantial domestic industry prior to that time. With the embargo and the lack of supplies of chrome, we shifted to other suppliers and other sources of both chrome and of ferrochrome, and the result has been over the period of years since then the decline of the ferrochrome industry in this country and a growing reliance upon ferrochrome materials, fabricated metals as well as the raw materials from foreign sources. Is that not correct?

Ambassador **Walters**. I believe that is, and I believe it was a curious time in which the Soviet Union was purchasing that chromium and reselling it elsewhere to some of the nations that were supporting the embargo which is typical of the kind of vagaries of politics that enter into these sorts of apparently commercial transactions.

The **Chairman**. And I think it also epitomizes the difficulty we have in balancing national interest because we certainly had the national interest in what was in the evolution of, the political evolution in Rhodesia, but we couldn't simply affect that political evolution without also affecting very directly a vital interest that we had in a defense industry that was of importance to us.

Mr. Ambassador, if the Cubans withdraw from Angola, leading to independence, what impact would this have on the stability of strategic mineral supplies from southern Africa?

Ambassador **Walters**. I think it would probably have a very favorable influence. First of all, it would lead to the end of the conflict on the Namibian-Angolan border at the present time. It would lead to much less Cuban influence and consequently probably less influence for the Soviet Union in disturbing relations between the countries of that area and the United States. I think it would diminish very greatly the sensitivity of the South Africans to the problems there. They have said repeatedly that they can live with their African neighbors but they find it more difficult to live with their non-African neighbors and we believe that the situation in that area would be a lot better if the non-Africans would leave and leave the African neighbors who have to live together, who are condemned by history to live alongside of one another, to live together.

In short, I believe it would be a very positive development. It has been stated abroad that the withdrawal of the Cubans is an American obsession or American condition. It is also a South African condition and not just an American condition, but I believe if anybody looks at it in a detached manner at all, they will believe that the cessation of conflict in this area which would follow a departure of the Cubans would be in the interests of all parties concerned, especially our own.

The **Chairman**. Thank you very much, Mr. Ambassador. Senator Warner?

Senator **Warner**. General, I can recall a rather vivid childhood memory just before I went in the Navy in World War II of a scrap drive that was conducted in this Nation, and I think sometimes it is wise to go back and revisit those chapters in our history.

All Americans were called upon to clean out their attics and basements for scrap iron, and particularly scrap aluminum. I remember the day very well for two reasons. One, I had to do all the cleanup in our house and pile it out front, and second, I remember my utter astonishment when my neighbor, an elderly woman, walked out with an arm-load of priceless shotguns from her deceased husband and threw them on the scrap heap, but it manifested her fear and our fear in this country about the shortage of raw materials and how we had to respond to collect those materials to defend this Nation.

Of course, we were lucky in certain respects in World War II. We had the time within which to mobilize our industrial base, our mineral base, so forth, to respond, and indeed we did, and also we should remember that this Nation was an exporter of oil in World War II and we not only provided for our own needs in the military and civilian sectors when we were on rationing, we provided for much of our allies. We can no longer do that.

At this time we are confronted not only with a shortage of minerals but a shortage of energy and other things should we be confronted with a military contingency.

Do you recall in the Caribbean in World War II the fact that I think one wolf pack of submarines for a period of 18 months had tied up the flow of petroleum in that area? Am I not correct in that?

Ambassador **Walters**. I believe without any base in that area the Germans sank almost more ships in that Caribbean area while having no base in the area than in almost any other area of the Atlantic Ocean.

Senator **Warner**. They operated in a distance of just under 3,000 miles, old diesel submarines, and today, of course, the Soviets have a modern submarine base in Cuba, the nation you referred to as one of the largest in the world.

Let's go back to Soviet strategy. I am sure you have many times studied that statement of Brezhnev to the effect that he would look to the Persian Gulf, and indeed the mineral supplies of the world.

Recognizing the dependence of the Western World on these sources, do you think that among the various Soviet strategies that there is an economic strategy to choke off our raw materials?

Ambassador **Walters**. Oh, Senator, the whole Soviet society is based on economic determinism. It is one of the fundamental principles of Marxism. In fact, I believe it happens to be—this is a personal belief of mine—it is also one of their fundamental weaknesses, because the economically strong, history has shown us, do not always win. If you compare the gross national product of Macedonia under Alexander with that of the Persian Empire, you would know the results would have to have been different, not to mention the Germanic tribes and the Roman Empire which was certainly the largest, most productive economic unit then existing in the world.

To all those must be attached will, and it is will that is the key factor and that will, if we have it, will enable us to make the right kind of determination between what additional production we should develop in the United States, and I couldn't agree more with the chairman's statement that the idea that there are no major resources left in the United States is absurd, and of course, the availability of immense, practically unexplored reserves from the point of view of Alaska, not to mention offshore mining and underwater mining of various forms, I think leaves open a great many alternatives to us, but these things take time to develop, and the really difficult task is to determine what it is we must continue buying from abroad to insure stability in some of these countries and what we must do to develop within the U.S. insurance or a spare tire against all of these problems.

I would just cite, for instance, during the invasion of Zaire, the price of cobalt from that area was affected in an extremely short time, but on the other hand, if we were, and we could not do it because it takes time to organize production within the United States, but if we were to suddenly cut off our purchases of strategic minerals, it would cause a total collapse of the economy of some of these countries.

Therefore, what we have to find is a middle ground that will provide for normally purchasing at the best available rate from outside, and also developing the potential of having available sources that we will not be subject to blackmail or political action against the sources of those. I think the mere fact that the United States is working on these areas will in a sense diminish the risk of blackmail.

The **Chairman**. Would the Senator yield for just one comment? If my memory serves me correctly, the Soviet Union had developed self-sufficiency in nearly all the minerals and had been buying very few in the market, in the world market, but quite a lot of cobalt just the year before the insurrection that disrupted the supply of cobalt.

Is my memory correct?

Ambassador **Walters**. I think it would be a very brave man who would say there was no connection between those two events. They do have something which I admire in a sense which is an extraordinary overall strategy which is military, political, economic, psychological, social, everything else, somewhere in that Foreign Policy Council, the Supreme Soviet, there is a superb mechanism for coordinating it and playing it like an organ, the right notes when they want at the right places and the right time. It is something we could examine and perhaps learn from.

Senator **Warner**. You might recollect the experience we had with Rhodesia in terms of our chromium and how the Communists took over there, basically choked off the supply.

Would you provide the record with your recollections on that chapter?

Ambassador **Walters**. They choked it off to a certain degree, but they bought large amounts of it and resold it I believe to the American community, consumers, in part. Even though they were denouncing us for interference in Rhodesia, they were not participating in the embargo and they were buying it.

Senator **Warner**. General, referring to Chairman McClure's testimony on page 4, this is a very difficult problem. Indeed we are facing shortly here in the Senate the request from the administration for somewhere between $8 to $11 billion for the International Monetary Fund, and I read a portion of the chairman's statement here.

> In addition, many of our foreign investments have worked a hardship on our own domestic mining industry. A good case in point is the recent announced intention of the International Finance Corporation to assist . . . a certain firm in Mexico 30 miles from our border, and as you know, our copper industry, as the chairman said, is flat.

What do we do in situations like that?

Ambassador **Walters**. It is a tough decision, Senator. We have got to weigh the economic impact with the economic impact of a destabilized Mexico which I would think would be the dream of any Soviet planner.

Senator **Warner**. Yes. That is the ultimate prize.

Ambassador **Walters**. Which would captivate American attention and the rest of the world would be almost a happy hunting ground, and I am not wise enough in these ways to decide exactly how we have to divide that.

We have a vital interest in preserving our own copper industry and preserving our own economy without which there is nothing, and at the same time we have a vital interest in a stable, non-Marxist Mexico, and that would require very careful study to decide exactly how that should be done and I do not have at this time—I just got back from San Francisco yesterday. I do not have at this time sufficient means at my disposal to give an intelligent opinion on that, but it is certainly something that the experts should be leaning upon. Again, that is the sort of thing the Soviets do so well. They weigh the internal cost as against what the outside gain will be, and I don't know what the ultimate quantifying factor is, but they have some way of establishing priorities, and really in almost every activity of the government nobody has the money or the men to do everything they want to do, and really the key is establishing the priorities in those things and then applying what men and money are available against those, so there you have a very difficult, very difficult question.

If it is 30 miles south of the United States, there is no reason there wouldn't be copper 30 miles north of there.

Senator **Warner**. If there isn't, there is some in Montana and some in Idaho. The chairman and I visited that question last summer. I think, Mr. Chairman, we should invite the distinguished witness to provide for the record his analysis of that issue, working with his colleagues in the Department of State. I believe it would be important for us.

The **Chairman**. We would welcome that statement and make it a part of the record when received.

Ambassador **Walters**. Very well.

[Subsequent to the hearing Ambassador Walters supplied the following information:]

DEPARTMENT OF STATE
AMBASSADOR AT LARGE
WASHINGTON

17 June 1983

Dear Senator Warner:

During the May 19 hearing on the Geopolitics of Strategic Materials by the Committee on Energy and Natural Resources, you asked me to provide additional information on the role of the U.S. Government in international financial institutions and in particular in the decision of the World Bank's International Finance Corporation to provide additional financing for the Cananea copper project in Mexico. You especially called attention to the possible harm this extension to the existing facility in Mexico might cause U.S. copper producers. You may recall that I mentioned the necessity of balancing the interests of domestic copper producers and the important foreign policy interests of maintaining the economic stability of Mexico.

The expansion of Cananea's copper production facilities would have gone forward with or without U.S. Government or World Bank support. In fact the World Bank's International Finance Corporation, after approving funding as part of an international commercial banking syndication, has put the project on hold because world capital market conditions made such a syndication impossible. I understand, however, that the Cananea Copper Company is proceeding with its expansion project on a reduced scale without World Bank support.

I appreciate the difficulties that the U.S. copper industry has experienced during the past two years of unrelenting foreign competition and low prices. However, as I testified before your Committee, we must examine U.S. Government support for these types of projects from the viewpoint of our national interest. Mexico's continued economic development is very important to its political stability. Two-thirds of Mexico's trade is with the U.S. Unless Mexico has a viable export trade, it is unlikely to be able to service its debt to U.S. banks or to import goods from the U.S. that it needs to promote economic growth in order to retire that foreign debt.

The Honorable
John W. Warner,
Committee on
Energy and Natural Resources,
United States Senate.

In further evaluating the balance of interests, it is important to keep in mind too that the U.S. Export-Import Bank credit to assist the sale of $116.5 million of U.S.-manufactured trucks and mining equipment to the Cananea Copper Company will benefit our country's balance of payments situation. The Bank's support, which assured this export opportunity for U.S. manufacturers of trucks and mining equipment, also provided many jobs in a domestic industry faced with a seriously depressed demand for its goods.

Our Export-Import Bank's support was clearly not the factor which enabled the Cananea expansion project to move forward. The Bank's decision to provide credits was based on several considerations, including confirmed foreign government supported competition. Had the Bank not acted, the project would have proceeded with purchases of mining equipment made by foreign suppliers assisted by credits from their national export-import banks. Not only would the expansion have gone forward, but a U.S. company would have lost a substantial export opportunity.

As in many cases, there are competing interests with valid needs. The U.S. agencies involved have done their best to accommodate both our domestic and foreign interests at the same time. I hope these comments are helpful. Please let me know if I can be of further assistance.

Sincerely,

Vernon A. Walters

Vernon A. Walters

Senator **Warner**. I will yield to my colleagues now, Mr. Chairman.

The **Chairman**. Senator Hecht?

Senator **Hecht**. Thank you, Mr. Chairman. Mr. Ambassador, I welcome that same question. In my State of Nevada in the mining areas, there is no question that nothing hits me like that question—how can we help other countries when our own mines are shut down? And so I would certainly appreciate some time on your part to analyze this because we are going to have to come to grips with it.

I cannot answer my personal friends in the mining industry in northern Nevada which is in a very disastrous state right at the moment, so please give us something on that. I would really appreciate it.

Ambassador **Walters**. I will do the best I can, Senator. As you know, right in your State there are those cities that are the victims of the drying up of certain markets for minerals which at one time caused great prosperity in that area.

Senator **Hecht**. And as Senator McClure in his opening statement pointed out, this is a No. 1 problem in my State in the mining industry right now, and it is something I am getting more heat on than any other question.

Thank you very much; no further questions.

The **Chairman**. Where there's heat, there's often light.

Senator **Hecht**. If we have the proper solution.

The **Chairman**. Senator Murkowski?

Senator **Murkowski**. Thank you, Mr. Chairman. Mr. Ambassador, I was very moved and impressed by your comments, your conviction and your knowledge.

However, we all seem to share a common interest here. We know what the problem is, but the answers don't seem to be forthcoming. They seem to have an awful lot of interested players in the development of our own strategic mineral capabilities, but inability to prioritize, identify, somehow keep it going and still maintain a free trade posture, a posture that does not enhance protectionism, and as a consequence, we never seem to get anything done.

You indicated in your remarks that we need to maintain a balance between what we buy abroad in the development of our whole mineral industry as it relates to particularly the strategic minerals. I indicated in my testimony that of the 29 strategic minerals, we have 18 in the State of Alaska. We have the only mercury mine in the United States to my knowledge. That has been opened and then shut down. There is no company, no priority, and I think what we need to do is either through the efforts of the State Department, the administration, identify who is going to bear the responsibility, to somehow direct some prioritization to maintain a semblance of production of strategic minerals. We can't do it on and off, hit and miss basis, and if we are going to be able to go out and buy mercury on the open market at a much cheaper rate, we are not going to maintain a mercury mine in this Nation. I think we need to reduce the rhetoric and determine whether or not we are going to put a task force together to address this problem? How are we going to accomplish this?

I guess that is my question, after assuring you that I agree with you, but where do we go from here?

Ambassador Walters. It is a very complex and a very difficult problem, and cannot be done by the Department of State alone because there are so many other factors involved. There is Treasury. There is Commerce. There is Interior. There is land. There are a whole series of things.

In my opinion, one of these entities such as the Cabinet Council on this sort of thing or the Annual Materials Play Steering Committee which is the organization which studies the procurement for the stockpile, perhaps higher than that—I would guess somewhere at the White House level it might be a good idea to have a committee to try and weigh——

Senator Murkowski. Isn't there a committee now, Mr. Ambassador? And that committee is concerned with free trade and the basis of protectionism, and as a consequence there is no consensus that comes out of those committees.

Now the Japanese are an ideal example of government working with industry, and you and I both know Minister Mikkhi, the Minister of Industry and Trade in Japan. They have worked with the private sector almost to the point of an association to determine and maintain it, while we have so many things in this tradeoff area, so many layers that are contradictory of one another that we just tread water. We spin our wheels.

Ambassador Walters. I agree, but the Japanese, first of all, have much greater ability to take a consensus by some mysterious method than we do, but I do think probably somewhere in Commerce is where—I am not an expert in this, but I do think probably somewhere in Commerce is where we should do this. If we have the ability to work in the way MITI works I think our exports would show a considerable increase.

Senator Murkowski. What we have done with MITI is we have established the responsibility in one end, and in this country, the responsibility is with the Trade Attaché and with the State Department partially, with the Department of Commerce. It is totally frustrating to get any kind of a policy commitment on what we are going to do, and I assume that you share my observation that talk has been cheap in this area.

Would it be appropriate to basically take the authority away from those groups, those areas that have some authority, and reestablish it in one place by legislative activity? Would you recommend that?

Ambassador Walters. That would certainly be one solution, but before you went to that, and I don't know what the drawbacks of that would be from the administration point of view, I think some sort of a sense of the Congress in a desire to find out an adequate solution to this problem, and because it involves so many Government departments—after all, the State Department is only involved in the external part, and you have much greater degree of involvement within the United States, and after all, one of the fundamental issues which I believe is to keep alive and prosperous the American mining industry, that cannot be done by the State Department. How you put that together in detail or whether it would require new legislation, I really have not gone into this in sufficient depth. I would be prepared later on after looking into this to give you an opinion, but I would find it difficult this morning to give you an opinion of where this authority should be vested, whether there exists sufficient authority, but insufficient coordination.

I would frankly, in all honesty, prefer to look into this matter a little more closely. As I say, we have to go far beyond the State Department because the principal part of it is internally in the United States and would involve departments other than the State Department and weighing the factors, the determining factors should be the internal ones rather than the external ones.

Senator MURKOWSKI. Well, I certainly thank you, Mr. Ambassador, for your input and your offer to reflect upon a reestablishment of responsibility because I am sure you would agree that when you can't fix responsibility, oftentimes the good intentions are lost and the momentum of everybody going around trying to do something, and I don't mean to speak for the chairman by any means, but I would certainly appreciate your reflection on how to go back and analyze the difficulties we have under our current operating establishment with the idea of perhaps doing away with it and reestablishing responsibility under one specific head, and there that group would be held responsible for their actual performance to stimulate and maintain a strategic mineral capability within this country so they are held accountable and nobody else.

It is not a State Department responsibility. It is not a White House responsibility. It is not a Department of Commerce responsibility, and Mr. Chairman, I would certainly look forward to the witness submitting this at his convenience. I think it would be very meaningful to this committee, and I certainly thank you for the spirit of that stimulating conversation with regard to this problem.

Ambassador WALTERS. Thank you very much.

[Subsequent to the hearing Ambassador Walters supplied the following information:]

DEPARTMENT OF STATE
AMBASSADOR AT LARGE
WASHINGTON

17 June 1983

Dear Senator Murkowski:

During the May 19 hearing on the Geopolitics of Strategic Materials by the Committee on Energy and Natural Resources, you spoke of the need for the Administration to place a high priority on strategic materials issues and to keep domestic mines producing. You also spoke of the success of Japan's Ministry of International Trade and Industry (MITI) in bringing together the best facilities of business and government to work amicably toward solutions of mutual benefit. You contrasted Japan's approach to that which currently prevails in the United States, where responsibilities for various programs are often dispersed among many different agencies. You then asked for the State Department's views on the necessity for new legislation. Here follow some comments in addition to those which I made at the hearing.

Strategic and critical minerals issues, by their nature, concern many Federal Departments and agencies. Statutorily assigned missions and responsibilities which relate to materials policy are dispersed because of the breadth of materials issues in both the Government and the economy. Therefore, I would agree with you Senator, that there is a clear need for a coordinated and focused attention to ensure the full and complete implementation of a national materials policy, and the capability of the United States to address and respond to materials problems, particularly where national security is concerned.

I agree with the Administration's position that the Cabinet Council on Natural Resources and Environment is the appropriate place to coordinate our national materials policy. The Cabinet Council ensures that important materials policy issues receive timely, high-level attention with the capability of prompt action on such issues by the President.

It also enhances the Administration's ability to provide program management guidance to the numerous Federal agencies and Departments, including the State Department, that are either involved in or have statutory responsibilities for various materials issues. This approach also permits maximum flexibility and economy in making use of the existing resources of the various agencies, as required.

I hope these comments are helpful to you. Please let me know if I can be of further assistance.

Sincerely,

Vernon A. Walters

Vernon A. Walters

The Honorable
Frank H. Murkowski,
Committee on
Energy and Natural Resources,
United States Senate.

Senator **WARNER** [presiding]. I would like to ask just one further question. You are such a unique witness and your background is so diversified. Among your many achievements is that you are a major general in the U.S. Army or lieutenant general? I have forgotten.

Ambassador **WALTERS**. Thanks to you; you confirmed me.

Senator **WARNER**. We arranged that promotion. The current budget before the Congress for the Department of Defense in authority is somewhere in the area of $270 billion. Much of that is for the acquisition of new equipment—two calvaries, several billion dollars apiece, tanks that now cost over a million dollars, airplanes, multiples of $10 to $20 million apiece, plus once the magnificent machines are constructed and turned over to the operating forces, few people recognize there is a constant pipeline of spare parts and replacement parts that must flow to these machines of defense, and my question to you is recognizing that many of those spare parts are forged and manufactured using materials from these diverse parts in the world, isn't it encumbent upon the Department of Defense to have a modest program of defense production here in the United States of America of some of those critical materials?

Senator McClure and I last year, bucking every tide in the Congress and indeed in the administration, finally got $50 million—mind you, that is $50 million compared to $270 billion, to start these various production lines in this country of some of these strategic materials.

Now we are also seeking $200 million this year for the same purpose. I would presume that based on your experience, recognizing the importance of the existing pipeline, that you would be supportive of this type of legislation?

Ambassador **WALTERS**. It would seem to make eminent good sense to me, and I would say coming from a Senator who is I believe the only Secretary of the Navy who was both a Marine and a Navy officer, that gives you a unique competence in this area.

I would think it would be vital for us to have within the Department of Defense a certain independence in this area, and the figures you speak of compared to the overall defense budget are small indeed. I don't want to intimate a billion here, a billion there, and a billion there, you really get into money, but the amounts you are speaking of are far smaller than that.

It would seem in any large organization one of the requirements I think is a need for flexibility, and if the Defense Department had certain resources that if it found a sudden shortage in, it could call on, you have certain things manufactured, it would be a great advantage in facilitating the flexibility in that, but I would say that one word of caution, which is possibly blasphemy in front of this committee, I think one of the things we have to watch out for is that we don't try and reorganize ourselves to the solutions.

Reorganization is a tribal cyclic American fertility rite. To my knowledge, it has never yet produced a healthy child, but the witch doctors who are engaged in this practice are highly regarded in our society.

I think we have to find real solutions, as you said, find someone who is really responsible for it rather than just reorganizing committees.

Senator **Warner**. Gentleman, it is a pleasure to have you before the committee. Thank you. I understand you are off on another trip?

Ambassador **Walters**. Yes, I am. Thank you very much, and I will make available those thoughts just as soon as I am able to collect them to the committee.

Thank you very much.

Senator **Murkowski**. Have a good trip.

Senator **Warner**. The committee will now have the benefit of a panel—Adm. William C. Mott, E. F. Andrews, Daniel Fine, Mr. Leonard Fischman.

We will put your whole statement in the record, and it would be appreciated if you would summarize your major points. Admiral Mott? And we will withhold questions until each member of the panel has had an opportunity to address the issue.

Chairman McClure was called away for another meeting, and he is very much involved in the budget which is the subject of considerable concern in the Senate today.

## STATEMENT OF ADM. WILLIAM C. MOTT, U.S. NAVY (RETIRED), VICE PRESIDENT, NATIONAL STRATEGY INFORMATION CENTER, INC., CHARLOTTESVILLE, VA.

Admiral **Mott**. Thank you, Mr. Chairman. I have a sense of deja vu when I appear before my Senator as I did last year on the same subject. In fact, there have been a good many investigations in the Congress into the subject of strategic minerals.

Let me just say that I am here this morning representing the National Strategy Information Center which is a private, nonprofit educational organization, and we don't have any ax to grind. We don't represent anybody. The only ax we have is the public ax.

I have listened to my old friend Dick Walters, and of course, I agree with much of what he said. There has been a lot of talk in this country about a resource war in the area of strategic minerals. Maybe it was a misnomer. Maybe we ought to call it the era of vulnerability, the era of dependence.

However, in looking for the most authoritative voice I could find to describe what is going on in the world of strategic minerals, I turned to our chief intelligence officer, the Director of the CIA, Bill Casey, who also happens to be a founding director of my organization, the National Strategy Information Center. Bill described the problem in these words. He talked first about the oil crisis, and there is a connection because the vulnerabilities are similar. He said:

> That crisis still haunts us with a new reality. Others, well away from our borders, can now place their hands on our economic throttles and on our economic throats. International tensions and threats are not limited to military ones. There are other power projections far more subtle because they are largely unseen and thus not readily perceived. Senator Goldwater warned of the dangers of being caught short without an adequate gameplan to deal with these shortages. We would lose access to the minerals chromite, cobalt, tantalum, and others . . . as well.

Of course, that is what we are talking about here is a game plan.

> It would mean massive shocks, Bill continued, . . . to our economic system and current life-styles. Without these minerals, we cannot make TV sets or computers or heart-lung machines or produce high-grade stainless steel for a thousand uses. The

implications for our defense capabilities are just as grim; no supersonic jets and no sophisticated submarines. In the future we can expect to be in competition with the Soviet Union for both oil and non-fuel minerals. They have both in Siberia, but the technological developments needed and the cost will make it prohibitive for some time to come. In response, the Soviet Union is moving toward a policy of selective and strategic dependency on foreign sources.

Let me just add to what Ambassador Walters said about Brezhnev and what you quoted, Mr. Chairman, that statement which he is alleged to have made, and I have no doubt he did make, to C. F. Barry in Somalia about getting control of the raw materials on which the West depends. He is not the first one in the Soviet hierarchy to say that. Mr. Khrushchev made a speech at the University of Jakarta when he was in power in which he said virtually the same thing, and before him Lenin made similar statements, and you can trace this down from the very beginnings of the Soviet hierarchy, that they have their eyes on the raw materials which supply the West.

Senator WARNER. Have you researched those statements?

Admiral MOTT. Yes, sir.

Senator WARNER. Would you supply them for the record in chronology?

Admiral MOTT. Yes, sir, I will, and as a matter of fact, I used to be the head of the Council on Economics and National Security, and Bob Salono who is the present head of it is planning to publish soon a paper on this subject and it details not only the statements of the Soviet leaders, but the statements of people like George Arbentroph who has written a book on this subject. At an appropriate time when this is published we will also provide that for the record.

You may remember, Mr. Chairman, that during the last Presidential campaign the American Geological Institute aided and abetted by our Council challenged the three Presidential candidates to speak out on their strategic minerals policy. Again, with a little help from Bill Casey, the only Presidential candidate to pick up that challenge was President Reagan, and he said to the American Geological Institute I hear you loud and clear and if I am elected, I will appoint a task force to look into the whole subject and make recommendations to me.

I had the honor to be a member of that task force, and after we considered all of the various elements in the supply of strategic minerals, we made some 33 recommendations to then Governor Reagan, and those recommendations, some of them, many of them you might say, were implemented, and it led to the first detailed national materials and minerals program in the history of the Chief Executive.

Now I know Eisenhower made a somewhat similar statement but not as detailed a plan as came from the Chief Executive. For instance, to give you an example, one of our recommendations was that the strategic stockpile ought to be brought up to established inventory goals as quickly as possible. That is underway. Nobody can take issue with what the President said. He said:

> . . . the stockpile should be sufficient to meet military, industrial, and essential civilian needs in support of the national defense in a crisis.

One might call into question the apparent lack of plans to achieve this laudable objective. It is now in the hands of the Cabinet Council, and they move very slowly, like snails almost, but almost every group which has examined this subject, beginning with the Paley Commission, has come up with a conclusion that the stockpile has been a subject of both neglect and abuse by means of which the sales of stockpile resources, as a budget-balancing mechanism, has been used. For instance, I am informed that we sold off cobalt at $2 a pound during the Lyndon Johnson administration, and of course, we just bought back $78 million worth of cobalt from Zaire at $15 a pound. They go by the axiom, Mr. Chairman, of sell low and buy high, which is not any way to run a business, and certainly not any way to run a stockpile.

Now in his report to the Congress, the President said that he would direct a panel of experts to review the quality of materials in the stockpile and recommend such actions as may be necessary to insure the quality of the stockpile. It seems to me to be a legitimate question as to how these experts will function to accomplish their mandate. We feel that there should be outside people like Andy Andrews looking into this, I guess principally because I don't trust bureaucrats to examine their own actions.

Anyway, we will have to wait and see what the panel come up with.

I do believe, sir, and I would like to make this point, that over the long haul, we ought to come up with some kind of an organization that would depoliticize stockpile management. I was very interested in the bill that Senator Schmidt introduced in the last Congress. In fact, he even reached mein Charlottesville yesterday, hearing that I was to appear before you, and the Senator said you know, Admiral, you must impress them with our vulnerabilities, and I said that I would do the best I can, but we must not allow the stockpile to be used as a political instrument.

Let me just say for the benefit of Senator Hecht from Nevada that one of the most thorough investigations into strategic minerals was made by one of his predecessors, Senator Malone, back in 1954. In fact, there are 10 volumes in that investigation, and I think myself, Senator Hecht, that the conclusions that were reached by that committee, and I have the two conclusory volumes with me, not all 10 volumes, are just as valid today as they were when they were made by your predecessor in the State of Nevada. I just would like to read that to you.

By the way, the report is very similar to the title of the investigation. It is "Accessibility of Strategic and Critical Minerals to the United States in Time of War and for Our Expanding Economy," and the committee concluded, one, it is vital to our domestic welfare, economy, and security that maximum economic production be maintained first—and this emphasizes what Senator McClure said—within our own borders, and second, in the Western Hemisphere; in other words, get away from this long sea voyage.

Second, during the last more than a quarter of a century established procurement practices have dangerously increased our dependence for the critical materials upon nations across major oceans without which this Nation cannot survive. We must avoid dependence upon overseas suppliers to the extent that these suppliers could suddenly render us impotent by withdrawing supplies of critical materials during a world conflict or could use such dependence as a political or economic bargaining lever.

Finally, mines once closed down, and you made this point a few minutes ago, sir, as it was made in 1954, mines once closed down require years of time and tremendous investments to reopen. With experienced workers, technical staffs widely scattered and machinery liquidated, mines flooded and caved, much of our once available reserves are destroyed and the prospecting for new resources is discouraged.

Failure to realize the situation could mean tragedy to our economy and our material security.

Senator WARNER. Admiral, one point here, I think you could be very helpful to the committee if you have got some thoughts on how you would like to have this depoliticization take place. I know there are several suggestions that have been around for a long time. Maybe you wish to renew them, but in any event, I agree with your basic premise that Presidents in the past have used this as a tool to deal with inflation and to make certain market adjustments. If we are going to put an end to it, perhaps now is the time.

Admiral MOTT. Well, Senator McClure at least put a stopper on the sale of silver, at least temporarily.

Senator WARNER. That is peacetime. Maybe we should have a setup like the Federal Reserve Board.

Admiral MOTT. That's right.

Senator WARNER. Constituted with experts like yourselves.

Admiral MOTT. That is exactly what Senator Schmidt proposed in the last Congress. I don't know whether that bill has been reintroduced, but something like that, giving the President the right to step in at a time of national emergency and override the Board might be something that this committee could very well consider.

Well, let me go back to tell you some of the problems that I now speak of.

Senator WARNER. I want to try and allocate basically equal time to the members of the panel.

Admiral MOTT. I will be very short, sir. As a naval officer, I think that these long sea routes are not protectable. You may recall, Senator Warner, when I testified before you on this subject, I traced the route of the 78 million dollars' worth of cobalt we bought from Zaire. It went by rail down through Zambia over the Victoria Falls Bridge through Zimbabwe down to the Port of Durbin in South Africa where it was loaded on a ship for 7,500 unprotectable miles to the Port of Baltimore. It never would have gotten there in time of national emergency I feel free to predict, and I just wonder, I pose this as a question whether we wouldn't have been smarter to invoke the Defense Production Act and mine some of that cobalt out in Idaho which could have been done for about $20 a pound, but we would have not only started up a mine, we would have had a more assured source. . I want to make one last comparison. You may not know this, but I know that Senator McClure did. There was an effort to fold up the Synthetic Fuels Corporation recently, at least there was a paper to come before the Cabinet Council to do that, and there is an amazing parallel, Senator, between the way we have wavered in the production of synthetic fuels and the same way we have wavered with respect to critical minerals.

I took it upon myself to find out what the Soviets were doing in this regard. I flew to London and I interviewed some scientifically inclined defectors, and I discovered that the Soviet Union since the 26th Communist Party meeting in 1981, Mr. Brezhnev said "Comrades, we are the largest producer of oil in the world, yet we know our sources are finite. Therefore, we must proceed with the development of synthetic fuels in the Katzhkin Basin," and he appointed an academician named Shadrin to look into this, and they have now gone undeviatingly into this area to the point where they are about to make a proposal to Germany which has all of the residual expertise in this area to come into the Katzhkin Basin near the Aneze River in the Soviet Union and build a $60.5 billion synthetic fuels plant.

Now we suffer from a glut psychology in this area. Instead of going ahead to develop synthetic fuels, we say well, oil is cheap now. In the mineral area which I am sure Mr. Andrews will discuss we have a similar psychology which is known as off-the-shelf mentality. That is something that Ambassador Walters mentioned, and so I find that parallel between our efforts to fold up our synthetic fuels program in this country and the fact we estimate there is nothing to worry about, we can buy 78 million dollars' worth of cobalt in Zaire and get it to Baltimore, but I assure you, sir, it would never reach there in times of national emergency.

Thank you.

[The prepared statement of Admiral Mott follows:]

# Prepared Statement of
# Rear Admiral William C. Mott,
# U.S. Navy (Retired)

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Vice President
National Strategy Information Center, Inc.

Before the

Committee on Energy and Natural Resources
United States Senate

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19 May 1983
10:30 A.M.
Room SD366, Dirksen Senate Office Building
Washington, D.C.

Mr. Chairman, my name is Admiral Mott and I come before you this morning representing the National Strategy Information Center — a private, non-profit educational organization. We have no axe to grind, except the public axe.

With respect to the subject of this hearing — The Geopolitics of Strategic and Critical Minerals — NSIC is primarily concerned with the national security aspects of the problem.

I assume Ambassador Walters will cover "Foreign Policy in the Security of International Minerals", drawing on his vast experience as Deputy Director of the CIA and a "world rover" on behalf of the diplomatic interests of the United States. My colleague, the respected minerals authority Andy Andrews, has also roamed the world in his capacity as Vice President for Materials and Services of Allegheny International, a large user industry. He will cover the stresses and strains of mineral supply and purchase in Southern Africa.

Let me start with as authoritative a statement of the problem as I could find. It comes from the present Director of the CIA, Bill Casey, who, with all the sources of intelligence at his command, defines the new minerals reality in these words:

> That crisis (the oil crisis of 1973) still haunts us with a new reality. Others, well away from our borders, can now place their hands on our economic throttles and on our economic throats. International tensions and threats are not limited to military ones.

> There are other power projections far more subtle because they are largely unseen and thus not readily perceived. Senator Goldwater warned of the dangers of being caught short without an adequate gameplan to deal with it. We would lose access to the minerals chromite, cobalt, tantalum, and others as Senator Goldwater told us.
>
> It would mean massive shocks to our economic system and current life-styles. Without these minerals, we cannot make TV sets or computers or heart-lung machines or produce high-grade stainless steel for a thousand uses. The implications for our defense capabilities are just as grim. No supersonic jets and no sophisticated submarines.
>
> In the future, we can expect to be in competition with the Soviet Union for both oil and non-fuel minerals. They have both in Siberia, but the technological developments needed and the cost will make it prohibitive for some time to come. In response, the Soviet Union is moving toward a policy of selective and strategic dependency on foreign resources. This is an alternative to the exceptionally high capital costs of their extending their own self-sufficiency.

You may remember, Mr. Chairman, that during the last presidential campaign the American Geological Institute, aided and abetted by the Council on Economics and National Security (an NSIC project which I headed at that time), challenged the three candidates "to speak out on their strategic minerals policy."

Governor Reagan alone, persuaded by the same Bill Casey I quoted above, accepted the challenge. On October 21, 1980, he announced the formation of a Strategic Minerals Task Force "...to examine this country's problems concerning the availability of resources vital to our industrial productive capacity." I had the honor to be a member of that Task Force. Maybe we didn't come up with all the answers needed, but at the very least our report to Governor Reagan led to an announcement by President Reagan of the first detailed National Materials and Minerals Program Plan in history by a Chief Executive.

Many of the thirty-three recommendations of the broadly based Task Force found their way, in one form or another, into the President's Program Plan. For instance, the recommendation by the Task Force to take short-term measures to bring the strategic mineral stockpile up to established inventory goals as quickly as possible is underway. The President, as his Report to Congress indicates, has made the first stockpile purchases in some twenty years and has announced plans to further augment the stockpile on a regular and sustained basis in the future.

No one can take issue with the general outline of the policy announced by the President in his Report, to wit:

> ...the stockpile should be sufficient to meet military, industrial, and essential civilian needs in support of the national defense in a crisis.

One can call into question, however, what the apparent lack of plans to achieve that laudable objective implies for the efficient evaluation and management of the stockpile.

Almost every group which has studied the strategic mineral stockpile in the past has concluded, as did our Task Force, that it has been a subject of both neglect and abuse by means of the sales of stockpile resources as a budget-balancing mechanism in previous administrations. In short, the stockpile has been reduced to a political football caught up in the budget process rather than being treated as the fundamental national security resource which it was intended to be.

The President in his Report to Congress states:

> We will direct a panel of experts to review the quality of materials in the stockpile and recommend such actions as may be necessary to ensure the quality of the stockpile.

It seems to me to be a legitimate question to ask how the experts will function to accomplish their mandate. Everyone recognizes the necessity for such action, and almost everyone who has looked at the problem feels that such a panel should be made up of carefully selected government and industry experts who would evaluate both the quality and quantity of current materials and establish priorities for eliminating, changing, upgrading and/or replacing existing stockpile inventories. We shall have to wait and see what the panel reports.

Somehow, over the long term, a method should be developed to de-politicize stockpile management. Serious consideration should be given to the establishment of an independent body — that is, one independent of bureaucrats — to oversee the stockpile.

At this point let me repeat for the record the key findings of another report of a committee of the United States Senate which seems to me to define pretty well what our minerals policy should be, even though the 10-volume study was issued in 1954. I refer to the Senator Malone Report on "Accessibility of Strategic and Critical Minerals to the United States in Time of War and for Our Expanding Economy."

> - It is vital to our domestic welfare, economy and security that maximum economic production be maintained, first, within our own borders and, second, in the Western Hemisphere.,
>
> - During the last more than a quarter of a century established procurement practices have dangerously increased our dependence for the critical materials upon nations across major oceans without which this Nation cannot survive.
>
> - We must avoid dependence upon overseas suppliers to the extent that these suppliers could suddenly render us impotent by withdrawing supplies of critical materials during a world conflict, or could use such dependence as a political or economic bargaining lever.
>
> - Mines once closed down require years of time and tremendous investments to reopen. With experienced workers and technical staffs widely scattered, machinery liquidated, mines flooded and caved, much of our once available reserves are destroyed, and prospecting for new reserves is discouraged. Failure to realize the situation could mean tragedy to our economy and our material security.

I would suggest to this Committee that the findings of the Malone Committee are still valid to this day.

As the Chairman knows, one of the first purchases for the stockpile was cobalt, some 78 million dollars worth, from Shaba Province in Zaire. The route that cobalt took to get from Shaba to the GSA warehouses in Baltimore would give anyone interested in the security of supply the jitters.

It traveled by rail down through Zambia, over the Victoria Falls bridge into Zimbabwe, thence across South Africa to the port of Durban, where it was loaded onto ships for the absolutely unprotectable sea voyage of 7500 miles to Baltimore. No wonder Senator Malone advocated developing domestic supplies and avoiding dependence on overseas sources.

It seems to me, Mr. Chairman, the country might have been better off to invoke the Defense Production Act and develop the domestic sources of cobalt, say, in your own state of Idaho, again for all the reasons cited by Senator Malone in 1954. Sure, we might have paid a higher price for the cobalt if we'd made a floor guarantee of $20 (we paid $15) but then again we might not, depending on what happened to the cobalt metals market. But, for sure, in developing a domestic mine we would have bought supply insurance for the future.

There is an analogy for the record between our wavering course in the development of domestic minerals and the even more wavering course we have followed in the development of synthetic fuels. As the Chairman knows, there have been moves afoot in some segments of the Congress as well as in the Executive

Branch to abolish — fold up — the U.S. Synthetic Fuels Corporation. At one time we were going to build 20 major plants and be well on our way to Arab oil energy independence. Then the price of oil dropped and we lurched from a crisis to off-the-shelf complacency. This "crisis to off-the-shelf" complacency syndrome is the one we've followed with respect to development of domestic supplies of strategic minerals.

For the record, I am submitting two articles that I have written recently for the American Bar Association's Law and National Security Intelligence Report (of which I am editor) on the ups and downs which we've encountered in the development of synthetic fuels. A situation similar to that of synfuels could be plotted on a time graph to illustrate the crisis over strategic minerals.

May I say with hope that I look to this Committee, and particularly to its Chairman, to set and keep a steady course for our nation with respect to both strategic minerals and synthetic fuels.

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AMERICAN BAR ASSOCIATION

STANDING COMMITTEE **Law and National Security**
**INTELLIGENCE REPORT**

Volume 5, Number 3 | John Norton Moore, Chairman | March 1983

## Synthetic Fuels: Vital Despite Current Glut

*Editor's Note: This article is particularly appropriate for this Report because it combines intelligence from various sources, including that of Soviet defectors with special scientific knowledge and it also concerns national security. Synthetic fuels will never be produced in any country until such production is regarded as a national security necessity. Nazi Germany so recognized it, followed by South Africa and now the Soviet Union. When will the United States so look upon production of synthetic fuels from our over 90 percent in the ground fuel reserves of coal, oil shale and peat? Before the next oil crisis is upon us, it is to be hoped!*

Words of praise for Brezhnev come hard to a former chairman of the American Bar Association's Committee on Education About Communism, and even harder to the present editor of its *Intelligence Report*. I can't recall when we've said anything nice about him or the CPSU Central Committee, which set the Five-Year Plan tasks for General Secretary Brezhnev and now carried over to his successor, Yuri Andropov. I'm about to do so, nevertheless.

I have nothing but admiration for the Soviet Union's farsightedness in the development of synthetic fuel and, I regret to say, shock at our own wavering approach and shortsightedness.

A few facts first. The U.S.S.R. is the largest producer of petroleum in the world and is likely to remain so through the 1980s. Ditto for natural gas; if not now, certainly when the Urengoi and Sredne-Vilyui fields (in northwestern Siberia) come on full stream for the pipeline. At the moment, they are number two in gas production (narrowly behind the U.S.), but they have over one-third of the world's proven reserves.

Why, then, with all these riches should the U.S.S.R. be concerned about the production of synthetic fuels from gas and its large deposits of coal? Simply, because its leaders are not, as we are, possessed of what Daniel Yergin of Harvard calls "glut psychology." Our "oscillations in government policies and the public attitudes it engenders," says Yergin, "leads us from panic and hysteria to the complacency of the glut psychology." [Yergin and Hillebrand, Editors, *Global Insecurity—A Strategy for Energy and Economic Renewal*, Houghton Mifflin, New York, 1982, p. 15.] The Soviets, meanwhile, recognize that production of synthetic fuels is a *national security* issue, have set the course and are pursuing it without midstream corrections.

The course was *charted* when, at a plenary meeting of the CPSU Central Committee meeting in Moscow on Friday, February 20, 1981, "Guidelines for the Economic and Social Development of the U.S.S.R. for 1981-1985"

*Continued on page 2*

## Court Upholds CIA On Covert University Contacts

As previously noted, FOIA cases abound in the District of Columbia simply because it happens to be the seat of the federal government. One of the more significant decisions handed down recently had to do with FOIA requests for information on CIA covert contacts with academicians or students at American universities.

*Intelligence Report*, in its April 1982 issue, dealt with one such case, involving a request by a university student for information on covert contacts at Cornell University. More recently, Nathan Gardels, a student at UCLA, inquired of the CIA under FOIA as to the existence of records pertaining to covert contacts for foreign intelligence purposes between the CIA and individuals at UCLA.

During the course of the litigation certain CIA documents relating to overt activities were released but

*Continued on page 5*

Editor: William C. Mott. Associate Editor: David Martin. Standing Committee on Law and National Security, ABA, 1155 East 60th Street, Chicago, Ill. 60637.

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## Synthetic Fuels Vital

*Continued from page 1*

and for the period to 1990 were approved for presentation to the Twenty-sixth Congress of the Communist Party.

The course for development of synthetic fuels in the U.S.S.R. was *set* and put on automatic pilot when General Secretary Brezhnev plotted the coordinates to five thousand delegates on Monday, February 23, 1982. After stressing that "the task of improving the structure of the fuel and power balance is becoming more and more pressing" and that "the share of oil as a fuel must be reduced and it must be replaced with gas and coal," he went on to state the directive (*ustanovka*) of the Party Central Committee with respect to synthetic fuels:

> *Looking to the long term, there should be a thorough study of the question of production of synthetic fuel on the basis of the coal of the Kansk-Achinsk basin.* (Emphasis added.)

With the course thus prescribed, GOSPLAN (the chief planning agency in the U.S.S.R.), the State Committee for Science and Technology, the Academy of Sciences and other research institutes drafted a program for the production of fuels from Kansk-Achinsk coal in the 1981-85 period. Academician A. Sheindlin (well known to our scientists) was made chairman of the Coordinating Council on Synthetic Fuel. Since his appointment he has written extensively on both plans and progress. Thus in *Izvestiya* (April 24, 1981), after quoting Brezhnev's directive, he went on to say:

> *The importance of the work in the program outline is obvious. Even though today our country is self-sufficient in oil and natural gas, the extraction of which will be even increased during the Eleventh Five-Year Plan, we are obliged, nevertheless, in the foreseeable future, to prepare technology for the period when the decreasing oil output must be supplemented by producing synfuels.*

*Since this first report by Academician Sheindlin, research and pilot experimentation have proceeded apace. Thus, Moscow radio reported on February 2, 1982:*

> *The technology has been developed for producing liquid fuel from the Kansk-Achinsk basin in Krasnoyarsk territory [in Siberia along the Enisey River]. The liquid fuel's quality is as good as conventional fuel oil and petrol. At the same time, valuable feedstock is obtained for many chemicals.*

*There has been no deviation from the course set by Brezhnev at the Twenty-sixth Party Congress. Scientific research organizations, design and planning institutes, and concerns and building trusts of twenty ministries* and agencies are all working on the problem with a single-minded goal. As late as October 19, 1982, in a long article in *Izvestiya* entitled "Petrol from Gas and Coal," Academician G. Boreskov, director of the Institute of Catalysis in Novosibirsk (near the coal basin) reports:

> The engine fuel requirements of our country will grow in the coming years by tens of millions of tons... There are only limited possibilities to meet these requirements by way of producing more oil... Therefore, the radical solution to the problem of additional engine fuel supply must be based upon using non-oil raw materials; first in the coming decade, it must be natural gas, and afterwards coal... the production of liquid fuel from, say, cheap lignites of the Kansk-Achinsk colliery complex could compete with petrol refining from oil. Bearing in mind that the U.S.S.R. coal deposits are enormous, we can see the obvious viability of such a solution... the present task is to design and construct the high-volume equipment which allows production of synthesis gas at lower cost.

While a Soviet writer would never be permitted to refer to South Africa as a success story in the production of synthetic fuel (or anything else), that country has designed and constructed three such plants (built by an American contractor, the Fluor Corporation), and by the end of 1985 will be providing near 50 percent of its liquid fuel needs directly at the coal mine site. I have visited all three SASOL plants, and they represent a fantastic technological achievement. The Soviets cannot profit from this (except through industrial espionage), because they are *persona non grata* in South Africa. And, unfortunately, the U.S. has failed to profit to the extent we might because of the internal problems of that troubled country. (Perhaps this will be alleviated by the Reagan policy of "constructive engagement" with that country.)

Three presidents—Nixon, Ford and Carter—have announced ambitious plans for the development of energy independence, in part through production of synthetic fuels. Nixon in 1973 announced a goal of energy independence by 1980. "Let us set our national goal," he said, "in the spirit of Apollo, with the determination of the Manhattan project, that by the end of this decade we will have developed the potential to meet our energy needs without dependence on any foreign energy sources." Watergate intervened, and the spirit of Apollo faltered until 1975, when Ford called for the building of 20 major synthetic fuel plants. We lurched from crisis to off-the-shelf complacency until the gas lines of the second oil shock of June 1979.

With the advent of the gas lines there was clamor by the public and the Congress for action. Carter offered a

*Continued on back page*

## Court Upholds CIA

*Continued from page 5*

would obviously be much easier; they could and would concentrate their efforts on the remaining American colleges and universities, and their sphere of activity could be appreciably narrowed....

We hold, under that standard and our decisions, that the Agency has met the burden of showing that it acted permissibly in its judgment that to reveal or acknowledge covert contacts with the University might very well disclose some sources or methods of foreign intelligence (or both)—and that the Agency's judgment must be accepted. The CIA position, detailed in affidavits and depositions, is specific and fleshed out as much as it can be done publicly, and is far from being merely conclusory; as a whole it appears "logical" and "plausible" in protecting our intelligence sources and methods from foreign discovery. In one word, it makes good sense. *See Halperin v. Central Intelligence Agency, supra,* 629 F.2d at 148; *Hayden v. National Security Agency,* 608 F.2d 1381, 1387-1388 (D.C. Cir. 1979), *cert. denied,* 446 U.S. 937 (1980)....

*Larry Williams*

## Synthetic Fuels Vital

*Continued from page 2*

quick technological fix to appease the frustration and anger of the American people: a very large-scale fuels plan. Congress in its wisdom proceeded to scale back the Carter plan and in 1980 passed the Energy Security Act, which created the Synthetic Fuels Corporation. The Act authorizes the corporation to award financial assistance to synthetic fuels projects and set national synthetic production goals of 500,000 barrels of oil equivalent per day by 1987, increasing to two million barrels per day by 1992.

Authorization and implementation, however, are different animals. So far, through no fault of the dedicated personnel at the Synthetic Fuels Corporation (many of whom gave up high-paying jobs to try to carry out the Act's express goals), there have been few private industry takers. Now the directors and officers of the corporation are being verbally beaten and bedeviled by some members of the same Congress that passed the legislation in 1980. They are calling the corporation and the whole synthetic fuels effort a "boondoggle," and some of them have even written letters to President Reagan calling for the corporation's abolishment.

If one were to plot on a chart the course of our own synthetic fuels effort from 1973 to date, one would immediately suspect a drunken navigator and call for his court martial or assignment to other duties, such as damage control. The synthetic fuels ship has sailed from shoal to shoal and is now leaking so badly some of its crew have taken to the lifeboats, and the oarsmen seem to be pulling in opposite directions.

The fact that there is at the moment a glut on the world oil market in no way diminishes the urgency of the situation. There could be another oil crisis tomorrow. All it would take would be a well-placed assassin's bullet or an advance by Khomeini (or the U.S.S.R.) into the Gulf States to take over the Middle East oil supplies. If we were ever thus deprived of access to our major sources of foreign oil, we might find ourselves in dire straits. We have a breathing spell now. Let's take advantage of it to prepare to meet any such contingency.

Development of the synthetic fuels option is a matter that vitally affects our national security. We can only hope, for the sake of that national security, that the present captain of the ship (President Reagan) will get everyone back aboard and set as steady a course for the future as the Soviets have—and stick to it!

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AMERICAN BAR ASSOCIATION

STANDING COMMITTEE **Law and National Security**
**INTELLIGENCE REPORT**

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## President Issues Directive On Safeguarding National Security Information

*Editor's Note: The following genesis and report of the president's recent directive on the safeguarding of national security information was prepared by Associate Editor David Martin. It is bound to generate controversy and in fact already has. Those of you who viewed the MacNeil/Lehrer program for April 29 witnessed the core of that controversy. Four participants, two pro and two con, "had at each other" and the directive for 30 minutes. On the side of the intelligence community and the government were Richard Willard of the Department of Justice and Daniel Silver, former general counsel of the CIA and a member of the Standing Committee on Law and National Security. They contended that leaks of national security information were harmful to the government and specifically to the intelligence community and that directive number 84 would act as an inhibitor to future leaks. The attackers were Hodding Carter, representing the point of view of the media, and Floyd Abrams, a defense lawyer in national security cases. They "pooh-poohed" the need for the order claiming that most leaks were caused by over classification and came from high places which never could be plugged anyway. "Name us one leak that damaged national security," they cried. Dan Silver knew of such leaks and said so but asserted to disclose them would exacerbate relations with foreign intelligence agencies and further damage national security. "Aha," Abrams and Carter replied, "that's the 'trust me' syndrome and we can't buy it." And so the dialogue of the deaf continued until Robert MacNeil sounded the bell to end the program. Readers can expect more of the same.*

President Reagan on March 11 sent to all departments of the government National Security Decision Directive Number 84, which deals with safeguarding national security information. The directive was accompanied by a letter from Judge William P. Clark, national security advisor to the president. It added some new requirements to those set forth in Executive Order 12356 (see *Intelligence Report* for September 1982). Among other things, it stipulated in the opening paragraph that "*every effort should be made to declassify information that no longer requires protection in the interest of national security.*" (Emphasis added.) It requires that all persons with authorized access to classified information shall be required to sign a nondisclosure agreement as a condition of access. It also says that the various agencies

*Continued on page 2*

## Synthetic Fuels: Interest Of Soviet Union Continues

The March issue of the *Intelligence Report* carried a lead article on the development of synthetic fuels in the Kansk-Achinsk basin in Siberia. Confirmation of Soviet resolve to press forward with its synthetic fuels program (in spite of being the largest producer of petroleum in the world) has now appeared in the public press. The following excerpt from *The New York Times* of April 17 cites the current direction of the effort.

> Soviet officials plan to revive discussions of a proposal for West Germany to deliver synthetic fuel plants to the Soviet Union in return for energy supplies, an authoritative energy newsletter said today.
>
> Industry officials and trade experts said the report was the most recent indication that Moscow may be seeking to mollify the government of Chancellor Helmut Kohl by offering trade deals.
>
> The newsletter, *Bonner Energie-Report*, quoted unidentified Soviet officials here [Bonn]

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Editor: William C. Mott. Associate Editor: David Martin. Standing Committee on Law and National Security. ABA, 1155 East 60th Street, Chicago, Ill. 60637.

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## CIA Prepublication Review Process

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in which the two parties to the employment relationship, the agency and the employee, set down their rights, duties and expectations...

"The agreement documents the special relationship of trust between the employee and the agency. In the *Snepp* decision the Supreme Court characterized this trust as a fiduciary relationship. In that case, the court held that such a relationship is created when an individual enters onto duty with the agency and is given access to information which constitutes some of the most sensitive secrets of our nation.

"In the Secrecy Agreement, the employee makes a number of solemn promises in consideration of employment and being granted access to classified information. One is a promise not to divulge classified information."

There is another promise which applicants for CIA employment are required to sign, and that is a "promise to submit to the agency for prepublication review any writings on intelligence matters the employee may prepare anytime thereafter for unofficial publication...It is on this promise that the agency's system of prepublication review is established....

"In 1977 the agency promulgated a regulation, HR 6-2, which created the Publications Review Board and vested it with the function of conducting prepublication reviews of manuscripts submitted by current and former employees. The board is chaired by me in my capacity as chief of public affairs...On the board sit six individuals, senior representatives from each of the agency's four directorates, with two representatives each from the Directorate of Operations and the Directorate for Administration."

The actual review process begins "when they [former employees] submit a manuscript to the Office of General Counsel, which has been designated by HR 6-2 as spokesman for the agency in these matters. That office immediately forwards the submission to the board noting any time constraints under which the author may be operating. The board then establishes a review schedule consistent with any such constraints and forwards copies of the submission to each of the components represented on the board. When they receive it, the components then disseminate it to those persons or subcomponents having expertise in the subject matter involved. The submission is then reviewed. If no classified information is found in the submission, the author is immediately informed."

The review board seeks in all cases to complete its review in a timely fashion, even though the workload has grown enormously in recent years. "In 1982 the average review took 13 days. The board always seeks to work with an author to meet his publishing deadline. In fact, a number of reviews have been completed in a matter of hours to accommodate authors writing for short deadlines....

"In 1977, the board reviewed a total of 43 books and articles. This number has risen steadily since that time...Since its inception, the board has reviewed a total of 836 manuscripts amounting to about 62,000 pages. Of these 836, 612 were approved outright and 182 were approved with some required changes, most of these quite minor. Eleven were withdrawn by their authors. Fourteen (10 current employees, four former) of the 836 were found to contain so much objectionable information that when the information was deleted, the remaining material did not make sense nor could it be rewritten to make sense. These were disapproved....

"When classified information is identified in a manuscript, the court decisions in this area indicate that the board can require the deletion only of those words which are necessary to protect the classified information. The board adheres strictly to this standard. In most cases, an author can rephrase the material in question so that his message can be communicated without disclosing classified information. In fact, the board affirmatively seeks to work with an author in such cases so as to accommodate his literary goals while, at the same time, ensuring that the final product does not contain classified information.

"An administrative appeal mechanism is built into the review process. This mechanism enables authors to challenge decisions of the board by appeal through the agency's inspector general to the deputy director of Central Intelligence....

"A paramount principle guiding the board since its creation has been one of evenhanded and fair treatment to all authors, regardless of their expressed or implied friendliness or unfriendliness towards the agency."

## Synthetic Fuels

*Continued from page 1*

> as having said that Moscow would offer contracts worth $16.5 billion to build the plants in the Kansk-Achinsk lignite field of southern Siberia, now in the process of being developed.
>
> The vast reserves of low-grade coal in that field cannot be transported economically to consumers and must be used locally, either as fuel in huge power stations sited next to the strip mines or in plants converting the lignite into synthetic liquid fuel.
>
> The newsletter said talks would take place later this month in connection with an energy trade fair in Hamburg. The Soviet Union is understood to be sending a large delegation.

Germany, of course, is the pioneer in development of synthetic fuels and if the deal is struck the world can depend on it—a great industry similar to SASOL in South Africa will develop in the Kansk-Achinsk basin. While the United States interest in synthetic fuels wanes, that of the Soviet Union accelerates.

Senator **Warner**. Thank you, Admiral.

Mr. Andrews.

## STATEMENT OF E. F. ANDREWS, VICE PRESIDENT, MATERIAL AND SERVICES, ALLEGHENY INTERNATIONAL, INC.

Mr. **Andrews**. As you might expect in these statements, there is bound to be some overlapping. We will try to avoid that.

Senator **Warner**. Thank you.

Mr. **Andrews**. Thank you. Let's lay a couple of little ground rules. First of all, I think I want to compliment the committee on addressing the geopolitical situation. For a long time I felt that was at the heart of the entire problem. We have skirted that problem and talked of economics and talked stockpile and talked of a lot of other things pertaining to the real geopolitical meaning worldwide, which I think is the problem.

Let me lay a couple ground rules. One, there is no shortage. I do not believe there is any shortage of anything. I do not believe we are running out of anything. Even if the world has finite supplies, by the time we reach the bottom of the Earth to get them, it will be so expensive nobody will be using it anyway, so it is a self-correcting system if you get out of the way and let it work, so let us not worry about the existence of material.

As you have properly said here, there is only one problem—will we have access? Will we have access when we need it, wherever that access is—under Yeemanee Falls, at the bottom of the Uganda or the Zambesi River in Zimbabwe?

We might also say how can a nation as richly endowed as the United States be dependent upon anybody for anything? We are richly endowed with many things. We have the world's mother load of molybdenum, and I certainly agree with Senator McClure that to say that we do not have economically feasible deposits of a lot of these things, particularly in the State of Alaska, is absurd. We have locked the door without knowing what is in the closet, and I realize that is an overworked statement.

However, as far as we know, we do not have economical deposits of growing lists of critical materials. My friend John Morgan from the Bureau of Mines will be glad to hold up a computer printout that thick [indicating] which will show in single file, single line, the known deposits of chromium in the United States—thousands of them. We know of 34 nonlaterite deposits that would be workable if we increase the price of chrome by 1,000 percent, and the GAO tells us that it would last 5, maybe 10 years, before they would peter out.

There may be the big mother load laying in Alaska, but we don't know, but as far as we know, there is this growing list, but if we are going to say that we are limited to these uneconomical deposits, not knowing what we have beyond that, who in the world is going to invest $500 billion, 5 years of work, to bring onstream an uneconomical chrome mine when the South Africans have a 1,000-year supply that they are probably going to be selling for 50 cents a pound, probably? But what if they can't, or won't, at any given point in time? Will we have the 5 years to put down the mine?

Who can afford to put it down and throw it in standby for 1,000 years? This is the kind of problem that we are really facing.

How come we didn't face it a long time ago? Because it really wasn't a problem a long time ago. Since World War II three basic changes, major, convulsive changes have occurred. One, an explosion of consumption; 75 percent of all the people in the history of the world who have ever used metal are alive and on the face of the Earth today. At our present rate of consumption, if we continue to consume at the present rate of consumption, we will consume more metal in the next 25 years than we have consumed thus far in the history of man.

Each person in the United States consumes 41,000 pounds of minerals a year. We need 4 billion tons of minerals annually to keep our economy functioning in the United States—a virtual explosion of consumption.

We have a virtual explosion of technology. My daughter can't believe that I grew up with a radio that didn't have a picture hooked up to it, or that they had airplanes with sticks on the front of them to make them fly. Jets, computers, high-temperature alloys, our environmental laws, our very standard of living, our restaurants, our hospitals, all requiring more noble metals than we have found in this country, so our explosion in technology has led us into a technological advancement requiring metals beyond our needs.

And the third thing that has occurred is decolonization—50 new nations alone since World War II in Africa. This has caused a reordering of priorities or reordering of ideologies, a reordering of politics, and while those metals, albeit in Africa, were in the hands of our friends from Europe, we now find we are sitting across the table from people with different allegiances and different priorities, causing a whole new set of standards for those of us in the world supply business.

Well, how have we handled these three major changes? Well, not very good; first of all, we started off a resource war in the United States, land use against nonland use, economic stockpiling against noneconomic stockpiling. We all started fighting among ourselves.

Then we appointed commissions and studied and studied and studied. Then we passed laws—Materials Policy Act of 1970, the Stockpile Act of 1979, the Material Policy Act of 1980. Then the President made the strongest speech any President made since 1950, but nothing has happened. There ain't nothing happened yet. We studied it and muddled through. In fact, we have been so successful in muddling through and landing on our feet that there is a growing school of thought and not without merit totally that that is the policy we should adopt. We will muddle through. We always have. Don't do anything. Somehow we will come through it and land on our feet and don't get overexercised about it.

Some also say don't worry, research and development will take care of it, and you can't deny the fact that look what frozen foods did for tin, satellite communications for the need of copper for wire. We will mine the ocean. We will mine the Moon.

The question is time. Will it happen in time for that denial of access? Maybe it will. Can we rely on it? We should look at substitutes, but I don't like substitutes. A substitute is the guy that sits on the bench, and why is he on the bench? Because he isn't as good as the guy on the field, and any day you talk about substitutes you are talking about giving up something in performance, in cost or something. We should have them, yes, but we shouldn't count on that being it because that means we are content with second best, and I don't like that position when we look at these things.

Of course we should look at recycling. Of course we should look at conservation. Why? Because of import dependency? No. Because it is good business, and it makes economic sense, and it is just good management, not because of any geopolitics. Therefore, is it a paper tiger? Well, I don't think so. As has been said, if you look at the three world class areas of minerals—Persian Gulf, Africa, Caribbean—once those have been mentioned here, you would put North America and Australia, but three of that five I mentioned are in continual turmoil and upheaval, indeed today open major warfare, people killing each other in all three of those areas right now, and it has been going on for a long time, and there is no reason why it will not continue to go on.

Then take that in light of the concentration in those areas—96 percent of the world's chrome reserves in two countries, 3 percent in Russia, Albania and Yugoslavia, and the whole rest of the world, 1 percent—so when they tell me we will develop those deposits that are out there somewhere else, that means moving 100 percent of the Western World's consumption into less than 1 percent of the Western World's reserves.

I will give you one you can put on your list, Bill. In 1921, Joseph Stalin said that victory over the United States in Europe will be facilitated by causing uprisings in the Middle East and Africa that will deprive the imperialists of their essential raw materials. From Lenin to Stalin and in 1957 Major Lagovsky; Brezhnev, the one you have quoted so well and so often, and all you have to do is look at the encirclement of the Iron Curtain countries, the upheaval and shooting, the fact that four nations in Africa have an arms agreement with the Soviets and three nations in Africa in the middle of that area are an avowed Marxist state, maybe that is no problem. The fact that the shooting that is going on in the Caribbean area is closer to Washington, D.C., than Los Angeles has to give us cause to say I think and I believe there is a resource war.

But even if you don't want to buy it, let's back off of that, there is plenty of people who are going to make it, and I personally believe that is what is going on—do we have a problem? Well, as I travel to Africa I see the Russians buying. Why are they out there buying? Now we have a new major competitor in the world marketplace, rather than putting in, taking out. Why? There are several schools of thought. One is that they stockpile, and this is a way to do it without getting into your own reserves.

Another is that he is arms building getting ready for arms reduction negotiations, but the one I rather accept is that we have probably seriously overestimated his own reserves. They aren't published and that he is going to be there in that marketplace as a competitor on a long-term basis, and then we say do we dare in these critical areas of destabilization let those nations drift into their hands? And the Russians would welcome this multiple dimensional global diplomacy, whether it be by design or just the fact they are there.

Would they have the power to deny us access? They did the Chinese. They did the Yugoslavians, and they did the United States during the Korean War. They have a history of when they have the power to deny, that they will do it and do it quickly. I think the Western World has to develop policies, indigenous supplies, stockpile reserves, diversification of sources, and if we do, we will greatly reduce the Russians' options, but let's throw the Russians out. The Russians are coming! The Russians are coming! That's a bunch of baloney! They are friends. They mean us no harm.

Do we still have the problem? Well, yes, and that is the problem of self-denial. There are those in this very building, there are those on this very Hill who would tomorrow pass a law denying us access to major raw material supplies in southern Africa. We put an economic sanction on Rhodesia and at that time they were our largest supplier, and in so doing set in motion the irreversible demise of the entire ferrochrome industry. That is the major contribution, contributing factor to that.

If we shove the Africans farther from us, do they move to a nonalined country and therefore we face an economic cartel? Chromium is the one metal in the world that I believe is cartelable. Cobalt can't be because they can't get along without producing it, but the South Africans can get along without producing chromium. It is cartelable—Risk 2.

Risk 3, and one that has occurred across Africa, is the rapid exodus of the skills to get the stuff out of the ground in the first place—305,000 skilled people in Mozambique in 1975, and by 1976 there was less than 3,000. As we see the rise of these skills going over the hill, the capability of keeping those mines operating is folding and falling.

If that doesn't happen, there is a growing school of thought among many experts who have frequented Africa, including and up to Robert McNamara himself, that they are on the verge of a major labor interruption. If the black African labor force, so essential to those mines, merely gets tired, says shove it, and goes back to the tribal trust land and shuts the place down, it could happen, but I think the one that is probably going to happen and is in the process of happening, whether it is caused by the Russians or whether it is not is immaterial, and that is the total general turmoil and upheaval causing racial and tribal conflicts that will keep the area in turmoil, and I think it is increasing and increasing daily.

Pipelines are getting cut. Production is being disrupted. Strikes are occurring. Bombs are being placed. People are dying, but as this climate of instability begins to grow and interruptions occur, the disruptions grow, the economy deterioriates, health standards fall—a major reason for the exodus of white skills—exodus of technology increases, the downward spiral accelerates and nation after nation retrogresses into the bush.

I believe we do have many reasons to be concerned with the geopolitical problems of denial of access. Exactly what should we do? Foreign policy, of course—we have got to learn how to get along with our bombs and how to live with their bombs. We haven't done that very well in the past couple of decades. As the Senator from Alaska has said, we must put somebody in charge. We are trying to run this whole thing by a committee, and you know what a committee produces. It is a camel that they call a horse. Once that body is in place with the power of the President to move across agencies, then we need to examine exploration, research and development, import/export, conservation, land use, DPA use, tax, private stockpiling, environmental problems, antitrust problems, to see that everything is considered and proper priorities are maintained.

And lastly, after we have done everything else, taken every other opportunity, our last line of defense is the stockpile. We tend to badly overlook this. We need to take it apart, because the stockpile has one thing. All it does and has ever done—don't ever lose sight of the stockpile—the stockpile does one thing. It buys time, time to ride out short-term interruptions and time to find alternatives for longer term interruptions. We must move to get the stockpile under different management. We must reexamine its mission. We must get it off budget, and we must come to grips with the problem that the next time you use the stockpile we probably won't be at war, but somebody will, but we will be the one that is shutting down, and lastly, we must not fall into the same trap that we did the last time, and that is think that by the fact that we come to grips with this, solve the problem immediately, that we have solved it forever.

After World War II we looked at it, we built a stockpile, and went home. Thirty years later we found that by God, the world has changed. This is an on-going, changing, dynamic world. It will be different 5 years from now and 10 years from now, so we need a changing, dynamic, moving policy to meet it.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Andrews follows:]

# STATEMENT OF
# MR. E. F. ANDREWS

VICE PRESIDENT
MATERIALS AND SERVICES

ALLEGHENY INTERNATIONAL, INC.

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

U. S. SENATE

MAY 19, 1983
WASHINGTON, D.C.

Thank you, Mr. Chairman, my name is E. F. Andrews. I am Vice President of Materials and Services for Allegheny International, headquartered in Pittsburgh, Pennsylvania. I want to express my thanks, Mr. Chairman, for the opportunity to address this Committee on what I consider to be an extremely important subject, the geopolitics of strategic and critical materials.

As one who has spent his entire business career involved in the business of obtaining international raw materials, I have trooped to this Hill many times to appear before both Houses of Congress on subjects all the way from the Rhodesia sanctions to stockpile reform, but I do not know of any subject that is more pressing and more important than this.

Before jumping into the subject at hand, perhaps it would be wise to lay a little ground work. I do not believe that there is any shortage, or lack of existence of any mineral, and there is certainly no immediate crisis. This world is made of nothing but minerals and metals and I do not envision any exhaustion of those supplies in the next decade or, indeed, ten decades. Even if you believe that everything is finite, if we will let the system work, it is self-correcting. For as we reach deeper in the bowels of the earth to get less yielding ores, the cost to do so will rise, and as it does, we will design away, so that by the time you do get that last pound, it will not make any difference--no one will be using it anyway. The problem is, will we have access to the critical and strategic materials at time of need? That is the only question--access at time of need.

One rightly might ask whether a nation as large and richly endowed as the United States cannot be independent of other nations for its raw materials needs. Certainly, there is a large list of important and strategic minerals of which we are richly endowed, such as molybdenum, but unfortunately there is a growing list of critical and important materials that we either have no known deposits, or what we do have is of such low grade that it is not economically feasible to produce. For example, we know of thirty-four nonlaterite deposits of chromium, but we are told that the price would have to rise from today's $100 per ton to $800 per ton in order for those small deposits to start becoming economically feasible. Who is going to invest and develop those deposits, only to have them as standby because Southern Africa has an 800-year supply that they will probably continue to sell at the low price. You will notice that I said probably, but what if sometime in the future they either cannot or choose not to sell to us. The same case can be made for manganese and, to some degree for cobalt and other materials.

How come we are just now beginning to focus on this problem. Since World War II, three very important and basic changes occurred. First was a virtual explosion in the rate of consumption of metals. It has been said, in a study done by a Professor at Penn State University in 1982, that 75% of all the people that have ever used metal, are alive and on the earth today. And at present rates of consumption, we will consume more metal in the next 25 years than we have consumed in the history of man to date.

"Americans today have developed a "store shelf" mentality. A television set is simply purchased from an appliance store, an automobile from the local dealer with the least expensive vehicle, and food from the downtown grocery. Forgotten is the fact that all of these items began with basic minerals and raw materials. Without minerals, there would be no modern agriculture, no energy production, no transportation systems or communications networks, and no weaponry for national defense. Each year Americans use for various purposes an average of 41,000 pounds of minerals per person. Over four billion tons of new minerals are needed annually to sustain the United States economy."

The second thing that occurred was an explosion in technology. The man on the moon, the jet, the television, the computer, the high temperature alloy, the high-tech industry all came into existence since World War II demanding more noble metals such as chrome, cobalt, platinum and titanium than our previous standard of living had called for.

And third, we had decolonization worldwide. Fifty new nations in Africa alone came into existence after World War II and in many cases they became the owners and the keepers of the world's known deposits of these materials, realigning the politics, realigning the priorities and concerns of the world supply system.

Now, how did we meet these three major changes? Really not very well. First, we started an internal resource war. Great battles of land use and anti-land use advocates. Pro and con arguments over economic use or abuse of the stockpile. We studied it, studied it and studied it. Yes, we did pass the Materials Policy Acts of 1970, the Stockpile Reform Act of 1979, the Material Policy Act of 1980, and the President did make the strongest statement on the issue since early 1950. But nothing really very important happened. While we lurched from crisis-to-crisis and shortage-to-shortage, somehow in every case we muddled through, and landed on our feet. In fact, this happened so often, that there are those that say that's what we should be doing. That there is no problem, and that we will somehow come through, and, therefore should not get over-exercised about our growing dependency and the changing politics of the supply world. Others say don't worry, research and development will take care of it.

In the future, undoubtly many of these problems will be solved by research and technological breakthroughs. Look what frozen foods have done for the need of tin for cans; satellite communications for the need of copper for wire. In the future, we will mine the ocean bed and the moon's surface. The question is--time. Will it happen in time or before time of need? Can we reply upon research and development to save us from the mid-term and short-term interruption of supply? Of course, there will be substitutes. But the moment you use the word "substitute," you immediately imply that you have given up something. It either costs more or performs less or otherwise it would not be a substitute, but the product of choice. Of course, we should stimulate and advocate recycling and other conservation methods and programs, not so much because of the import dependency, but because its just good business and makes economic sense to do it. But we have really not done a whole lot. But should we? Is there a real threat, or is it a paper tiger?

Well, I for one cannot help but be concerned, particularly in the short and mid-term, when he looks around at all of the world class minerals areas, and sees the turmoil and the upheaval that is occurring in three of the most important; the Persian Gulf, Southern Africa and the Caribbean. In these three areas major open-warfare is occurring today. Is there a danger that political or military conditions will deny us access to essential supply? Should we take steps now to come to grips with the supply problems that can develop in these areas?

The problem is even more concerning when you see that some 96% of the world's reserves of chromium and manganese is in one or two countries in Southern Africa. 3% is in the Iron Curtain countries of the U.S.S.R., Albania, Yugoslavia and the rest of the world is endowed with less than 1% of the world's known reserves. A similar case can be made for other metals, such as platinum, tantalum, etc.

A compelling question and one that has prompted much debate is: Is the Soviet Union engaged in a long-term, systematic strategy to deny the West access to critical mineral resources and seek privileged access for themselves? "The Resource War:" Is it part of their strategy to militarily move (albeit by surrogates) to encircle, and thus control, or gain control by whatever means, of these great treasure houses? In 1921, Joseph Stalin said, "That victory over the United States and Europe would be facilitated by uprisings in the Middle East and Africa which would deprive the "imperialist" from essential raw materials." In 1957, Major General Lagovsky stated, "The policy should be to link the Middle East and Central and Southern Africa into one single, super theater of peaceful warfare so that they might obstruct the West from access to both the oil and strategic metals of the areas." Again, in 1973, Leonid Brezhev said while visiting Somalia, "Our aim is to get control of the two great treasure houses on which the West so vitally depends, the energy treasury house of the Persian Gulf and the mineral treasury house of Central and Southern Africa." Can we believe them?

One only needs to look at a map of the three areas and see the virtual encirclement of the Persian Gulf and Southern Africa by countries either dominated by or leaning to the Iron Curtain community. One has to ask, why are 30,000 Cubans, and thousands of East Germans in Southern Africa? There are various destabilizing groups that are active and operating throughout the area, such as SWAPO, that are receiving direct financial and military aid from the Soviet Union.

Look at the great choke point of the Caribbean, through which a very large portion of our oil and critical materials must flow. The President has called it the domino effect coming up from Cuba to Nicaragua, to El Salvador, to Guatemala and ultimately to Mexico. The building of major airstrips in a small island of Granada without the hotels to support the tourist trade or attract them. These encirclements are concerning and make a case for the "Resource War." I personally, believe that this is part of their strategy.

But the argument against it is that the Soviet Union is present because they have need for those raw materials and they do not have the economic strength to prosecute such a war.

During the last few years the Soviets have become less self-sufficient in this field and, according to some experts, are moving rapidly from self-sufficiency to import dependency. This has added a new dimension to Soviet strategy. It is no longer a case of denying resources to the West simply to weaken them. The Soviet Union now has a strategic, long-term interest to compete with the West for the mineral resources of Africa.

Its foreign exchange resources, though substantial are becoming insufficient to buy its requirements in world markets. In this regard it is important to bear in mind that Moscow's military, para-military and political ventures are costing a lot of money. Hence a stepping up of the Soviet Union's efforts to secure these requirements by other means. The first step is to bring about some kind of political alignment, backed, if necessary, by military effort, perferably through surrogates, and thereafter tying the countries concerned economically to the Soviet-led Council for Economic Mutual Assistance (CEMA). It is interesting to note that the Soviet thrust in Africa in the seventies occurred during the so called dètente period. Do we dare let these critical areas continue in a state of destabilization, drifting at best to nonalignment, but at worst to alignment with the East, and thus placing in their hands the power to deny us access when it suits their purpose, either militarily or economically.

Also, beyond the resource war concept, are there other risks? I think yes. If the Soviet Union is not prosecuting a resource war, meaning an intended, semi-peaceful takeover of the areas of world class supply, perhaps it is merely economic or political opportunism. A policy of strategic metals diplomacy. I am sure the Soviet Union would find it a useful addition to its multi-dimensional global diplomacy. There is a difference between a policy dedicated to stirring up opportunities and forcing openings, and one content to merely be positioned to exploit a circumstance if it occurs. Even if they do not envision resource denial as a strategy for peacetime, would they, if a military situation presented itself, look at it completely different? They certainly denied access to the Chinese and the Yugoslavians in times past, and, indeed, to us during the Korean War. It should be expected that the Soviet Union would halt supplies of given minerals in a bilateral relationship if it finds compelling reasons to do so. It would seem to me that it is certainly to the West's best interest to see that such a situation does not arise. If the Western nations develop policies, indigenous supplies, stockpile reserves, diversity of sources, all of this would have great effect on any Soviet strategic minerals diplomacy, and their options would be limited and possible ineffective.

Forgetting the Soviet threat, do we still have a problem of denial of access at time of need? It would seem to me that we do. There are those in the Congress of the United States, and many more in the United Nations, that would at this time impose self-denial to Africa. We put economic sanctions on Rhodesia for ten years and, at the time we did, they were furnishing the major portion of our chromium.

There are those who would put sanctions today upon South Africa, and deny us access to that country and thus effectively to Zimbabwe. Would this, if it did occur, expose us to another risk by pushing South Africa into an economic cartel? It's a possibility, particularly in chromium. In other words, let's shoot ourselves in the foot.

Another danger exists in a too rapid exodus of the technical skills from the mining countries of Zimbabwe and South Africa as occurred in Zambia, Mozambique and Tanzania thus, rendering the productive capacities of these great resources ineffective. All one has to do is look at the deterioration of the infrastructure of a Zaire, a Zambia or a Mozambique, to have high concern as to whether over time they would be able to maintain anything near the output that would be needed by the free world. This, I believe, represents a very real threat.

Another risk is the probability of a major Black African labor upheaval. The large essential African labor force of South Africa just walks out and goes home to the tribal trust lands. Many experts on Africa see this as a real possibility and timing for such a major and prolonged labor confrontation is five to ten years.

A further threat, and I believe the greatest threat, is the civil disorder, and general destablization that is and will continue to occur in the form of racial and tribal conflict whether stirred up by the Soviets or not. There are dissident forces in South Africa, Zimbabwe, Zambia, Zaire, Angola, Mozambique, Namibia and even Kenya, and many are in open guerilla conflict. Pipelines are being cut, production disrupted, strikes, bombings and people dying. In such climates of instability, how can production and transportation of minerals be maintained? As their disruption grows, the economy deteriorates, health standards fall, exodus of the technology increases, and the general downward spiral accelerates. Nation after nation retrogressing into the bush.

Threat to transportation interruption is another problem I will leave to others on the panel to cover.

I, indeed, believe that we have a real and growing geopolitical problem with our strategic and critical materials, and the rest of the West is in worse shape than we are, and if we had to share our stockpile, we might last only one year instead of three.

Should we be doing anything? I think so. First, we should strengthen and improve our data base. The Bureau of Mines is the finest data source in the world, it is still inadequate when it comes to international material. We need to put somebody in charge. We should put our materials policy problems, under a body that has the power of the presidency behind it to coordinate and implement a changing and ongoing policy.

Once in place they should then systematically review our import, export, conservation, land use, DPA use, tax, private stockpiling, environmental and antitrust policies across the board, to see everything is in tune, proper priority is given and balance maintained.

And lastly, when all alternatives fail, we move to our last, and probably our best line of defense--the Stockpile. We should remember that the stockpile does one thing--it buys time. Time to ride out an interruption on the short-term or to find alternatives for the long-term. The stockpile is badly in need of immediate attention to its management, the product mix, the quotas, the quality of material, all should be reviewed. We should immediately consider legislation to move the stockpile off the budget, to remove it off the yo-yo course it has been on, where it has been abused for political reasons, and we should face the fact that probably the next critical use of the stockpile will not be when we are in war, but will be when somebody else is at war but we are shutting down. Examination of those non-military uses of the stockpile for essential services should be made and the parameter for those uses established when there is no crisis.

We should also keep in mind that this is a changing world. Technological advancements have rendered materials, so essential just a few years ago, not needed today. And new materials and new uses are being brought to the market place on almost a daily basis. Therefore, we must be careful not to structure a policy and a program of critical materials that is excellent for the situation as we see it today, and then lean back on our laurels and assume that we have solved the problem forever. In a sense, this is what we did following World War II. We looked at the problem, we built a stockpile, and we walked away thinking we had solved the problem forever. Now we wake up and find the stockpile is in disarray and contains the wrong things for today's world. The dynamics of consumption, of technical breakthroughs, and of political realignments make critical materials a changing problem, one that needs constant vigilance and constant management. This has been a primary failure, in my judgement, and we must take the steps to see it does not happen in the future.

I commend you, Mr. Chairman, for coming to grips with this problem, and particularly at this time when we are not in a crisis, and can debate this issue, calmly and with cool heads. As you can see, I believe, that we should move and move now, so that we will be prepared for what does come.

Senator **Warner**. Thank you, Mr. Andrews.

Can I hear from Dr. Fine?

## STATEMENT OF DR. DANIEL I. FINE, RESEARCH ASSOCIATE, MINING AND MINERALS RESOURCE RESEARCH INSTITUTE, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Dr. **Fine**. It is a privilege to be here this morning to renew a historic continuity in this committee on the geopolitics of minerals.

During the 1950's and 1960's there occurred a change during that period when the least cost approach to obtain strategic and essential minerals began to prevail. It should be pointed out that the least cost approach to mineral acquisition took place during a period when the U.S. power projection bases overseas for security extended worldwide. When there was a different balance of power and a different alinement of military and defense forces in the world it was very easy then to talk about a least cost approach to obtaining strategic minerals in the 1950's.

That period has vanished like the British Empire with the onset of decolonization throughout the world. One of my purposes this morning is to review very briefly with the committee an assessment of the Soviet Union in world mineral behavior. This topic has become increasingly important since 1980, the invasion of Afghanistan, the developments in Poland, and earlier in 1975 with the appearance of Soviet and Cuban military force in central Africa.

The Soviet Union pursues a policy of mixed self-reliance but has the capability of flexibility to obtain materials, strategic materials, to itself from foreign sources by way of barter, by way of acquisitions through foreign policy, trade, and assistance missions, and eventually the Soviet Union has considered the acquisition through equity of foreign resources themselves outside the Soviet Union.

The picture is not absolute. The Soviet Union's mineral base is stretched in transport time and cost between eastern Siberia, the old heartland itself, and into the northern Arctic Circle. Briefly, commodity by commodity, the pattern of the Soviet Union in the last 4 years raises questions of Western security or at least Western concern.

For example, in 1982, just last year when the world metal market collapsed and metal prices reached historic lows, copper, for example, tumbling to the 1921 price—just 12 months ago copper shut down nickel worldwide and base metals in the West were no longer operable—during that period the Soviet Union decided to dump into the world market below cost 75 million pounds of nickel. This was regardless of the unemployment it has caused in Ontario, the primary free world producer of nickel. This was regardless of the U.S. production in Oregon, minuscule as it is, nevertheless shut down for technical and for market reasons. Wherever there was nickel sold here in 1982, the Soviet Union through trade channels in London and directly sold under other competitive producers.

The damage that the Soviet Union inflicted on nickel capacity in the West is yet to be assessed. Even with an economic recovery, it is doubtful that full utilization and additional mine financing and exploration will take place as we assumed in the 1970's before this situation.

The behavior of the Soviet Union then is in the metals market to disregard the rules, to pursue national interest, and to weaken the capacity of metals and metallurgical production and security within the West.

On the horizon the potential in the late nineties in nickel is serious, ominous. Cuba will produce 40 to 60 million pounds of nickel per year, and the Soviet Union 272,000 tons of new capacity in its copper/nickel center. Cuba with 25 percent of the laterite nickel reserves, and the Soviet Union with 35 percent of the sulphide nickel reserves in the world can begin to mount an offensive against free world competitive and market-centered nickel produced such that market after market may be lost in the late eighties to the Canadians and Australians and others who practice business economics or cost-effective management.

In palladium and platinum, the Soviet Union has also penetrated the markets with bizarre behavior. The Soviet Union in palladium alone has restricted supplies to the West at a critical point when Western uses of palladium are increasing, not only as an alternative to platinum itself, but in electronic plating and other areas in the microchip and the microprocessor area. The Soviet Union by withdrawing supplies as the primary world supplier has escalated prices from $54 an ounce in June 1982, to as high as $137 an ounce just 2 months ago.

This behavior of the Soviet Union to some is good business, but the Soviet mining enterprise is not business. It is a state. It is the Soviet national state which owns and operates and deploys scarce resources which can make up this industry. Within the last 18 months a strategic materials or metals unit appears to outsiders to have emerged as a primary decisionmaking unit within the Soviet techno-export and razno-export agencies. Westerners who deal with the Soviet Union are dealing through an intermediary that they cannot identify but which appears now to have supreme authority on decisions of exports, sales, contracts, and commodity-specific decisions.

On the other hand, the Soviet Union continues to import lead concentrate, tin, molybdemum, and other metals that they are deficient in, but it is interesting that the Soviet Union pursues those purchases from abroad. The outstanding contract with Kenya to procure fluorisbar from Kenya is seen in Kenya and Africa and Moscow as a political decision to give the Soviet Union a beachhead in terms of political influence in that particular country.

The possibility and certainly the probability that the Soviet Union since last fall will take very seriously exploration of gas and oil in the Arctic Sea, in the Barents Sea at great costs—$500 million per drilling ship, 300 on order, 2 now operational, demonstrates a 15-year master plan to conquer the Arctic which was announced in October in Moscow. Should the Soviet Union through Andropov exert more discipline and efficiency in the mineral resource sector, we will confront a flood of low-priced metals, ores, and concentrates from the Soviet Union which will disrupt Western investment, Western operated and owned mining enterprises in the West.

This will be on a scale far exceeding the already damaging exercise of what is known as the Japanese model. Just to digress for a moment from the Soviet Union, since 1974 this committee and others are well aware that under the U.N. flag and the U.N. declarations at Lima and at Dakar, winner takes all has been the objective of LDC producers in strategic and nonstrategic minerals. This means an historic shift of state enterprise ownership over private foreign investment in those countries. Whether or not it is of direct equity to have private ownership or state control over marketing, it is a declaration of the Group 77 to extend further control over the natural resource base and to collaborate as a 77 or a block in the world in terms of selling and price stabilization.

This penetration also into world markets, privately controlled, causes disruption in the sense that at the present time Western smelters and refineries must search the world for concentrates or feedstock for prior invested smelters and refineries. Feedstock is no longer available or is diminishing to them simply because of the politicization of local processing, value added at the sources, that country X is no longer willing to sell the concentrate. It wants to process the concentrate and refine it into battle.

What will happen over time now to the existing capacity and the investment in that capacity in smelters and refineries if the source of feedstock diminishes and the transfer of production is complete to the LDC's with high political risk to offshore United States?

A third problem is not that this administration has done nothing. It is not a problem of doing nothing. It is not a problem of nothing has happened. This administration has made every effort through the Department of Interior to extend the geopolitical primacy of land access, access to land mining and resource expansion and wealth as the first principle of the geopolitics of minerals. Every nation does this. Every nation pursues this national policy. Countries such as Japan with almost nonexistent lead and copper pursue protective positions for those diminished reserves because they are within the flag jurisdiction of Japan, Germany, or elsewhere.

This country has pursued a policy which appears nonrational and historically opposed to the basic principles of the geopolitical notion of mineral distribution in the world, which is that minerals are unequally divided or distributed as geological occurrences. National policies then are needed to correct geological inequality of mineral resources, but in the United States, congressional withdrawals of lands have appeared to Germans, to Japanese, to Koreans, as the apogee of irrationality in terms of the self-denial of an enormous resource base and the denial indirectly to them as our allies. Senator Murkowski's point about Alaska is universally known and badly understood in Bonn, Paris, and other capitals which are import dependent.

I want to move rather rapidly to cobalt as a case study, Senator Warner, and the position on cobalt and in other areas to revive the historic instrument of state policy in the United States. The Defense Production Act with full funding is an example of what any rational government would do if it possessed cobalt and it was dependent 97 percent on cobalt concentration in two countries, both of which are demonstrably unstable.

Let me point out what is more safe than cobalt from Idaho, Missouri, and California? What is more secure as a source of supply?

What is more invulnerable to transport excursions? What is more indifferent or insensitive to the problem of expatriot mangers and expatriot technical direction needed to maintain production? I think it is clear that to depend on cobalt supply which requires seasonally that the managers of that cobalt capacity must go to Quebec, Canada, to interview French-speaking mining engineers under contracts to go to Zaire in order to operate a national localized cobalt-copper complex in 1983, to a great power as the United States, this raises questions of security of supply.

The FEMA, the Federal Emergency Management Agency, has provided a plan for a correction or an alternative source of supply under national security grounds which fulfills I believe the essential national policy considerations within the geopolitical context—a domestic supply of cobalt balanced by additional purchases with a floor price or guaranteed price to the producers for 5 years out.

We emulate or we much applaud the Japanese, but in the mining sector we are doing nothing even resembling what the Japanese would do if they possessed cobalt in Idaho, Missouri, and in California. This is a clear example of national policy recognizing geopolitical reality under an existing statutory authority in funding a domestic supply which increases the world supply of cobalt which stockpile acquisitions do not.

With respect to the Soviet Union, it pursues and annexes and extends influences to border countries to obtain supplies it does not have to the Soviet Union. In a recent study of James Watt as Secretary of the Interior and his program, the United States under his direction is now providing leadership, and to paraphrase the Soviet Union, the leadership in the raw materials problems of a great power and in terms of solving that problem, leading to a generic recovery. This is a rough paraphrase of the Soviet review of the work of the Interior Department in this particular administration, but as Mr. Will Dare knows and has researched in 1980 as the staff member of a House Subcommittee on Mines and Mining, the Soviet invasion of Afghanistan was not indifferent to the iron ore or the mineral potential of Afghanistan and the oil and gas capability and capacity of that region.

I should like very rapidly to turn to two more points in the geopolitics of minerals. One is that we should not only look at this disruption, but dislocation as a primary factor in any geopolitical or cost-effective assessment of what we do in policy. What we may be witnessing is the outline of the dislocation of the entire industry, metallurgical, technological know-how embodied in what we call the monument industry of the United States, as a threat that dislocation potential is vulnerability over the long term. It is a shift to mineral sources outside the United States, and that particular shift raises deep questions of national policies and national security.

Finally, I would point out a new danger approaches in terms of our own vulnerability, and that is the debtor/creditor situation and the impact on international mineral supplies.

The General Accounting Office, when it pursues criticism of the administration in terms of not accelerating international investment in strategic minerals overseas, its investments in those sources of potential strategic minerals has been rejected by private decisionmaking because of political risk by officers of the international mining companies.

Zimbabwe's Marketing Board is an example of control over Zimbabwe's internal foreign-held mining industry. It is not direct nationalization or expropriation, but it is control of marketing and exports which means de facto control of the entire industry.

What the GAO is suggesting is more investment flow through multilateral agencies to Zimbabwe and other countries which do not increase vulnerability or risk to U.S. supply.

The debtor/creditor situation is on the horizon, and I ask this as a question. Is there a symbiosis between debtor and creditor in strategic and raw materials? Is a country that is in debt going to be a source of materials? Are we going to encourage our purchases of minerals from countries with the highest public commercial or foreign debt? Do we bail our Mexico, Brazil and Argentina, for example, by way of accelerated raw materials or mineral purchases, much to the damage of domestic mining capability and mining investment in the Western World?

Finally, in conclusion, I would point out that the wilderness and the land access question in the United States may have reached the point of permanent contraction of the mineral resource base and while the world looks on that particular action as a source of political instability in the United States, the United States has had one response.

Rather than to do nothing, the Secretary of the Interior initiated an ill-fated proposal to declare a 200-mile zone from coastal zone areas into the sea under U.S.-flag jurisdiction so that all organic and nonorganic resources would be available to commercial development and exploration in the United States. This 2.9 billion addition to the United States could be a reserve, a strategic reserve in the future for the lead oxide and the cobalt. What has happened here is a geopolitical exercise of expanding access under national policy and jurisdiction against losses on land.

This administration has perhaps lost one by land but has had a victory at sea.

Thank you.

[The prepared statement of Dr. Fine follows:]

# STATEMENT OF

Dr. Daniel I. Fine, Research Associate
Mining and Minerals Resources Research Institute

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Before The

Senate Committee on Energy and Natural Resources

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Less than three years ago, the public, media, and much of the Congress had not yet heard of "strategic minerals" or "cobalt" or South Africa as the "Saudi Arabia of minerals"[1] Dependency on foreign sources of supply was totally detached from diplomacy as the Carter Administration in 1978 prepared sanctions scenarios against South Africa. Access to public lands for minerals exploration and development was separated from domestic mining capability in the event of industrial mobilization or from national defense itself. The answer for everything was deep seabed, under the Law of the Sea Treaty, which would supply the world with mineralized nodules free from the politics and pollution of land-natural resources. This was the time of the "ecofreak"" and other forgotten illusions.

In June 1980 the World Affairs Council of Pittsburgh held a conference on "Resource War: Dependency, Diplomacy, Defense." Its report, distributed to Members of Congress in September, established the relation between mineral strategic import dependency, defense and diplomacy. For the first time since the late 1950s, a geopolitical view of raw materials entered the public policy process. Even before his election in November President Reagan established a Strategic Minerals Task Force for the Transition. The Reagan Administration established a strategic materials working group. That group completed a minerals policy and materials plan last year. Secretary Watt was responsible through the Cabinet Council on Natural Resources and the Environment.

The emphasis of this Administration upon the vulnerability of U.S. import dependence has stimulated other governments to reassess their raw materials problem. Japan has established an economic security rare metals stockpile which will provide a 60-day supply of essential metals. The United Kingdom followed Japan with a surprise announcement that it had partly abandoned its traditional reliance on Commonwealth raw materials availability in favor of a strategic minerals stockpile. West Germany, under the Kohl government, will no doubt reconsider the 1980 decision to postpone stockpile formation.

Following United States leadership in minerals security stockpile organization, these major industrial powers have recognized their exposure to the risk of raw materials supply disruption. In the case of West Germany it is national policy to guarantee minerals supply to its domestic industry. Japan (MITI) has concluded that the "availability of minerals resources could pose a short term sporadic threat or a protracted institutional menace to the economic security of Japan."

Security of supply, apart from business cycles, is the central component of the geopolitics of minerals. For most of the 20th century access to raw materials has been associated with wars and military conflict. It is no less true in the 1980s. Although the language of the "cost-effective approach" prevails in peace, emergency mobilization planning and war itself supercedes such "models" and their authority over decisions of national security. So decisive are minerals resources in these higher-than-cost effective moments in international politics that an argument was made in 1943 to the effect that the combined minerals reserves and resources of the British Empire and the United States, together with control of the sea and air, was the basis of world control of war and peace. This power, it was recommended, could be used as a framework of collective action to prevent future wars.

Four decades later, the British Empire has vanished, the public lands of the United States have been placed in a "resource freeze" in which declaratory de-access to land mineralization has stopped the growth of the resource base, and control of the sea and air partially awaits the outcome of the resolve of the Western Alliance. It is this vast change in the availability and control of minerals that has revived the anxiety over security of supply.

No longer do "Anglo-American" international mining and metals companies provide a market with reasonable prices and assured deliveries to industrial consumers throughout the world. Indeed, recent history is replete with nationalization and later "re-negotiation" in which the national governments have progressively diminished the ownership and control of such companies over minerals on a massive scale. Government mining and metallurgy has placed 70% of the world's cobalt reserves under political control. The intervention of national-state producers in world mineral markets has escalated the apprehension over security of supply.

The first reality of a geopolitics of minerals is the universal inequality of the distribution of natural resources. National policy begins from the assumption that if conquest or annexation are ruled cut, and a given mineral is necessary to industrial progress and security, a strategy to obtain a secure supply is imperative. The Federal Emergency Management Agency has provided the U.S. with that strategy: it is a dual strategy that stimulates domestic production of cobalt and at the same time calls for incremental purchases (imports) for the Stockpile. A five-year cobalt price guarantee is recommended to assure domestic mining a rate of return.

In the context of a geopolitics of cobalt, the Administration has developed a policy of security of supply. What is more secure than cobalt in Missouri, Idaho, and California? What insurgency can deny transport facilities? What trans-border delivery system is needed? What can Cuban or Soviet Block training missions do to influence a change of ownership? Moreover, is there not an increase of non-quasi-monopolist production of cobalt in terms of *world* supply? Have we not seen the results of non-OPEC increases of oil production?

The General Accounting Office response to the Federal Emergency Management Agency strategy mainly differs on price forecasting and costs. But it also argues against a "peace-time depletion of our limited cobalt reserves." Thus, the General Accounting Office *excursus* into minerals is empty of that magic elixir known as mining and metallurgical expertise. Strange though it may seem to the General Accounting Office, the history of mining demonstrates that persistent mining, far from exhausting our reserves, actually assists in maintaining and increasing them. The reason is simple: mining itself makes possible the continual search for new ore bodies and the extensions of old ones. It also mobilizes the imagination and motivation of mining technologists toward the passage of non-economic to economic resources by innovations in low-grade ore recovery.

The General Accounting Office response to the price forecast of cobalt overlooks the wreckage of oil price models. A prominent minerals consultant, with its vaunted model, took five tries to get cobalt right. The last effort admitted cobalt was $6.00 per pound, but in an earlier version -- one that might have influenced domestic investment in cobalt mining -- the consultant forecast $19.60 per pound by 1983 (this year). The General Accounting Office appears to be insensitive to the position that economic models (and modelling executives) have been excessively influential over public policy decisionmakers.

The General Accounting Office and the Congressional Budget Office reports on cobalt do not comprehend the geopolitical content of minerals policy. There is no comprehension that world cobalt supply increases will be necessary to offset a single monopolist position of Zaire and to maintain reasonable prices when the Zambian copper reserves (from which cobalt is derived as a byproduct or co-product) are depleted in the early 1990s. Both reports fail conceptually to recognize the difference between political and commercial control of cobalt production.

The General Accounting Office in a different study is critical that the Administration is less than excited about supporting international programs to develop strategic minerals outside the United States. If security of supply as a primary variable is integrated into the General Accounting Office recommendation for a "coherent well-directed, long term investment strategy," the outcome would doubtlessly support domestic cobalt production in the United States. The vast stagnation of mineral investment in Africa is no accident. Throughout the Third World since 1974, the Group of 77 has discouraged mining investment through "sovereign-take-all" declarations on natural resources ownership. Private ownership and management correctly assessed the implications of such programs as the "new international economic order" and promptly intensified exploration in the mineralized areas of the world which provided for mining laws and investment codes that protected claims, reinforced contracts, and minimized government intervention.

U.S. government support for strategic minerals investment in the developing countries would be contrary to the market-centered decisions of individual mining company executives who assess political and economic risk. Security of supply should be a central objective of U.S. assistance for overseas investment in strategic minerals. Thus, it is difficult, if not impossible, to understand how the United States can guarantee itself such security as a condition of investment in a developing country. That would call for the repeal of the decolonization process itself.

The concept of "Resource War" is a break with the illusion of East-West minerals investment and trade which characterized the period of detente. The Soviet Union restricts vast areas not for environmental purposes but for reasons of defense. It will reveal nothing of potential mineral occurences even to the interested Western investor. Minerals production and export information are regarded as "state secrets."

Despite Carter Administration idealism in non-fuel mineral policy studies that the Soviet Union would cooperate with United Nations sanctions of South Africa and become an alternative supplier to the West, the Soviet Union has always regarded the raw materials problem of the West as a weakness to be exploited in foreign policy. The Soviet Union regards natural resources in the developing world and high consumption/low supply in the industrialized West as a principal conflict over the unequal distribution of wealth in the world. The Soviet Union understands that it is this conflict itself which assures it will continue to be an exporter of arms to the side which must import them.

"Resource War" is a capability to deny natural resources to the West. It is not a "grand strategy" which is found in secret documents or pronouncements. Because it is not visible apart from the outbreak of war, a resource war is a strategy to exploit the weakness of war preparedness or emergency mobilization capability. During the First World War, Germany assured itself of chrome supply security through its alliance with Turkey. In the 1970s, the Soviety Union provided Turkey with assistance to develop aluminum capacity so that its traditional short-fall of bauxite could be supplemented by stand-by capacity in Soviet -occupied Turkey. In both instances, Germany and the Soviet Union advance their preparedness for war by way of a strategy of resource war contingency.

"Resource War" also refers to the deployment of Soviet Union mineral resources. During most of 1982, Moscow "dumped" over 75 million pounds of nickel (the most conservative estimate) into depressed world nickel and metal markets. Free market Canadian nickel producers lost the Western European nickel market to Soviet exports. Sudbury, Ontario, resembled a disaster-area as shut-downs forced thousands of Canadian miners into lay-offs. When confronted with the evidence of "dumping" Soviet officials denied that it was a case of "dumping" or selling below cost. But the Soviet Union nickel producer is the USSR itself. A private firm, no matter how massive, must cut costs when it cannot derive a profit from its output. A nation-state concealed as a mining enterprise can allocate costs elsewhere.

The Soviet Union nickel-copper complex which produced at sub-economic costs is north of the Arctic circle at Norilsk. Capacity at Norilsk imcreased 60% recently to give the USSR a total of 272,000 tons per year. Norilsk has unlimited cheap energy from natural gas. Its labor costs are nominal since the USSR itself is the employer. Inco in Canada could reduce operating costs to $2.15 per pound as the most efficient producer in the West. But even with an official ruble-dollar exchange rate discount, Soviet costs at Norilsk are estimated in comparable terms as $0.75 per pound.

The Soviet Union possesses 35% of the world sulphide/nickel reserves and Cuba has 25% of the world laterite/nickel reserves. Cuba is staking out Southern Europe for its nickel markets and the USSR has dominated the old "Inco Europe" market share of West Germany and France. In the late 1980s a combined USSR-Cuban nickel "Resourse War" is probable with years of market destabilization leading to the decline of Western nickel capacity.

The Soviet Union is preparing for a historic drive to develop its natural resources in the Arctic and Eastern Siberia. Norilsk and its nickel destabilization no doubt is the first example of the results of the magnitude of that potential. Last fall, under the declaration of "conquer the Arctic" the Soviet Union began a 15-year master-plan program to exploit the Arctic Ocean (Barents Sea included) for oil and gas. With such development at any cost ($500 million per deepwater drilling ship), minerals will follow energy. Major projects such as Udokan in Eastern Siberia await transport and external capital infusions. The Soviet Union has realized that it cannot compete with the West and Japan in the export of technology-intensive goods. It has perhaps adopted the strategy of primacy in raw materials.

International raw materials stability deters Western and Japanese capital and technological transfers to develop Soviet natural resources. Resource War environments will compel the Japanese to consider secure sources of minerals in Soviet Siberia. Moscow has consistently reminded the Japanese of their vulnerability to raw materials disruption. But it is only the Soviet Union in Southern Africa and the Soviet naval fleet in and around the sea lanes which represents the danger to Japanese security of supply. Dependence on insecure foreign sources of supply is exchanged for dependence on "secure" sources (USSR) of supply. Southern African strategic minerals supply instability and disruption creates over time the condition of Japanese diversification of supply to Soviet sources on Soviet terms.

Despite a policy of diversification, Japan remains dependent on South Africa for ferrochrome (60-80%), managangese ore (40-60%), chrome ore (40-60%), vanadium pentoxide (60-80%), and the platinum group metals (40-60%). EEC and U.S. dependency is comparable. In the case of ferrochrome, U.S. dependency has reached a high as 80% of total imports derived from South Africa. Only the Soviet Union has the capacity to become a residual supplier, a strategy it is now following in chrome supplies to Japan.

The industrialized metals civilizations depend on South African mineral feedstock. The Geopolitics of Minerals without recognition of South Africa is comparable to a Geopolitics of Energy in which Saudi Arabia is peripheral or absent. Since 1978 the Federal Republic of Germany has pursued a chrome diversification policy to reduce the dependency of Bonn on South Africa. The principal result of that policy is a miniscule addition to world capacity in the Republic of the Philippines. The world recession that shut-down stainless steel production in Germany has obscured the marginal insignificance of that drive toward diversification.

For nearly a half century it has been in the collective interest of the West to assure access to South Africa in case of war. The prequisite of assured access consisted of several contingent precautions; mineral production facilities should be operational in terms of modernization, capacity, and sabotage control, exploration and development of new mineral deposits should be unimpeded by non-market forces, railroads should be standardized as to gage and modernized, harbor facilities should have stand-by or emergency capacity. South Africa has achieved this state of mineral export preparedness through internal outlay of capital investment. It is a secure source of strategic minerals when linked with plans for its determined defense by the West.

The impact on the GNP of Japan, Germany, and the United States of a cut-off of chrome and/or associated strategic minerals is negative whether for six months, one year, or beyond. National-state control of South African mineral export capacity, similar to Zaire, Zambia, and Zimbabwe (partial) would undermine security of supply throughout the indistrialized market economies. Inflationary effects, with or without U.S. national defense stockpile releases, would shatter the prospects of economic recovery as commodity prices would reach historic highs. The loss of South African market-driven, competitive minerals management would deprive the West of the world's greatest mineralized "element-complex" bulwark against decisive politicization of global natural resources.

It is not, therefore, the call for mandatory controls (consumption) and stockpile hedges against the effect of sanctions upon South Africa that makes a strategic minerals policy. The failure of the McGovern Report (1980) and the Senate Foreign Relations Committee report last year is the politicized approach to raw materials supply security. An assumption that we must do without South African strategic minerals is followed by self-denial costs that would require a mobilization consensus to legitimate. While chrome substitution and controlled lower consumption advocated in the McGovern report, technological progress in South Africa has changed the composition of steel itself. The emergence of CR12 from South African R&D could replace a significant share of the world carbon steel consumption. CR12 is corrosion-resistant but not corrosion-proof steel. It has less chrome, an enormous potential of application, but it will increase ferrochrome demand. With CR12 the world will be more rather than less dependent on ferrochrome -- South Africa the major source.

What is obscured behind other objectives which have nothing to do with the national interest in security of supply is a foreign policy towards South Africa which decreases risk and thereby vulnerability. That foreign policy is now in place. To the extent that "constructive engagement" augments security of strategic minerals supply from South Africa to the West, we have a foreign policy which serves American interests. A foreign policy which is accessible to international sanctions or which pretends that the U.S. has no economic (raw materials) interest in South Africa interferes with perceptions of supply security. Consumers and processors of chemical chrome in the United States were alarmed at the potential risk in the previous foreign policy towards South Africa and consequently stockpiled at least one years supply at extraordinary carrying charges during a period when cost-cutting was essential.

It is also clear that the geopolitics of minerals must raise the question of the proximity of military force projection to mining and metallurgical capacity. The Cuban military presence in Southern Africa deters new mineral investment and development in the entire region. Capital which is sunk into mineral investment is not mobile. But additional investment, apart from state-owned enterprise with political objectives, is not forthcoming as long as external militarized force is present. The withdrawal of such force in association with a settlement in Southwest Africa/Namibia is not only essential for capital flows into mineral projects but for the security of strategic mineral supply from the region.

To other industrialized countries, security of supply from the United States is increasingly imperfect. Land withdrawals from potential mineral exploration and development in Alaska and elsewhere are understood as a permanet contraction of the U.S. mineral resource base. Social policies which have imposed these limits to future mineral availability are perceived as a source of political instability in the United States. It is no accident that the United Kingdom will purchase molydenum for its new national stockpile in spite of the fact that the U.S. is the world's largest producer from the world's largest reserves. Less land access translates into commensurate modifications of expansion and growth of the U.S. mining and metallurgical industry. Security of supply always and ultimately must depend on state of the extractive sector as the instrument of physical delivery. Diversification to U.S. sources, a vital component of a security of supply strategy, has been discouraged by the indifference or hostility to mining in the United States as a strategic support system in Alliance well-being.

Mr. TERRELL. Mr. Fischman, we will proceed. The Senator will be right back. He had to step away for about 10 minutes.

## STATEMENT OF LEONARD L. FISCHMAN, PRESIDENT, ECONOMIC ASSOCIATES, INC.

Mr. FISCHMAN. I am pleased to respond to the committee's request to testify today, and I request that my prepared statement be included in the record.

Since I am probably in a minority, at variance with the other panelists on many of the views expressed, I am somewhat at a loss to know whether I should proceed along the lines of my initial statement or plunge into rebuttal.

I don't mean that I disagree with everything that has been said. I would certainly agree that there is a risk or a series of risks that relate to our nonfuel mineral supplies. I think these risks cannot be ignored and they should be dealt with.

I am not as convinced as the other speakers that there is in effect a strategy or plot centered around denial of strategic minerals to the United States. I would readily agree—since I am an economist and not a political scientist I can make these observations freely—I would readily agree that the Soviet Union pursues certain political strategies, and I think their stragegy is one of opportunism and I think their strategies lead them to take control and influence wherever they can and they don't need a minerals excuse to do so. It is, of course, not to their dismay that they may in the process also gain control over potential sources of strategic minerals for the United States, but I seriously doubt that this is the indicator of their world policy.

Given the fact, however, that there are risks of supply, I think the critical questions that the country faces is how to deal with that, and I am not certain that the picture has been completely presented.

Domestic production which has been concentrated to a great extent here as the most appropriate fallback to the alternative dependence on foreign sources to my mind, now speaking as an economist, may or may not be the most appropriate type of fallback at all times under all circumstances.

Since we are dealing with risks, what we are facing essentially are decisions on insurance. When one makes decisions on insurance, one has to consider two particular aspects of the insurance balance. One is how much damage one is exposed to, and that damage will be evaluated in terms of how easily we can or cannot bear the damage, and that is on the one hand.

On the other hand is how much it is going to cost us to insure against that damage. As far as the insurance, the premiums to be paid, the steps to be taken either to avoid damage or to insure against it, I see no reason why there need be anything more or anything less than a least cost solution for any given amount of insurance.

Now admittedly a lot of these evaluations have to be subjective. One cannot evaluate the damage from the interruption of, partial interruption of industrial operations in the United States in peacetime or the contingent interruption in wartime without considering the nature of the ultimate effect of that interruption, the time it is going to take to adjust to it, and how seriously we regard the damage that will be wrecked in the interim.

Similarly, one has to, and we do, look very hard at the costs of insurance, and looking particularly at the puniness of our appropriations for acquiring materials for the U.S. stockpile, the current frame of mind seems to be that the cost of these premiums, the psychological cost of these premiums, comes very high indeed, and the insurance may not be worth a great deal.

The particular problem with domestic production, there is more than one problem with domestic production. The principal problem is cost. A stockpile once acquired is limited in cost to its carrying cost, the interest on the extra debt that we have incurred to buy the stockpile, the maintenance, storage costs, and so on. A subsidy to domestic production is one that is likely to go on indefinitely.

Now there was mention here of the 5-year purchase plan. Is anybody here ready to predict that the kind of contingency for which we are insuring ourselves is going to occur within the next 5 years? If the 5 years is up, what happens to the domestic production at that point? We have not only shot our value in terms of the money down the drain for insuring the capacity, we have also taken a little bit more out of our domestic interest, that is, there is a long-term reserve to develop if we want it.

In oil, if you want to look at the history of the thing, to all intents and purposes we have done things exactly backward. When we were an oil exporter, we protected domestic oil, and so we ran down our domestic reserves when we could have had the foreign stuff cheaply. Now the foreign stuff is expensive and we no longer have the same amount of domestic oil. I think one has to pause to consider whether there may not be more value in maintaining some of these resources in the ground instead of using them up at times like the present when we can get foreign resources much more cheaply.

Now there is a tradeoff. Obviously it is worth something to have domestic capacity on hand, and if the price isn't too high, I would agree myself that this is a way to go, but in the present market situation, I don't think you can point either to cobalt or to chromium as examples where the price would not be extremely high in terms of the immediate alternatives.

Sure the Soviet Union, as Dr. Fine suggests, is engaged in some amount of world politicing with resources, but so are we. It is the only natural thing to do. We didn't buy bauxite from Jamaica wholly because this was the highest priority purchase within the limited budget for the defense stockpile. There were good political reasons for wanting to support Jamacia with those purchases of bauxite at the present time.

I think we have to expect that this game is going to be played, and it is going to be played by both sides in this world, the political game.

I think there is a role, and I will wind up and perhaps more will come out in the question and answer period, there is a role for the proper conduct of foreign policy or for using foreign policy and our international relations as a way of increasing our security of supply of minerals as well. Certainly to my mind, despite the reservations that Dr. Fine has expressed, there is a point to negotiating freer and more secure access for U.S. investments in the various places where strategic minerals can be obtained.

The reason for the reluctance of U.S. industry to go into these places in recent years has in part been security of access, but manifestly it has also been the world market. There has been no great incentive to be developing new sources of minerals nor a great amount of money to do so with the industry in the State that it is in. With recovery in the world, I think that given the proper facilitation by the Federal Government in its international relations, U.S. industry will once again want to develop additional foreign sources.

Now this is just as much insurance as domestic sources. It is the diversification of supply basically that provides the insurance against interruptions from any one source. Where the sources are particularly concentrated, it is more difficult than in other cases. Chromium is one of our more difficult cases, but even in those cases there are alternatives, and that 1 percent of reserves if I may, Senator, is not the whole story. In terms of that 1 percent of reserves, those reserves represent a good deal of production capacity and there is at least a dozen places around the world where chromium can be gotten and is being gotten other than South Africa or even South African Zimbabwe.

I think the important thing, there was reference made to the embargo on Rhodesia at this time—perhaps it was a mistake to enter into that embargo. I personally don't think so. While it was not mentioned, it was not a U.S. embargo. It was a U.N. embargo, and by not participating, the United States did lose a great deal in terms of its international relations.

I think that our mineral supply situation is something to be concerned about and something to take insurance against. I don't think that considerations of mineral supply need override any of our basic principles as a nation or consideration for our own international stature.

[The prepared statement of Mr. Fischman follows:]

Statement of

LEONARD L. FISCHMAN
President, Economic Associates, Inc.

Before the Committee on Energy and Natural Resources
United States Senate

May 19, 1983

My views on the subject-matter of today's hearings may be summarized in two propositions: (1) We face problems that clearly merit national concern. (2) We need some measure of good sense in thinking about those problems and deciding what to do about them.

The fact that the United States relies wholly or nearly wholly on imports for its supplies of a number of rather critical minerals conceivably exposes us to three different kinds of risk. The first, which I shall deal with rather briefly, has been dubbed "The Resource War." The second relates to supply and price risks during peacetime. The third has to do with our ability to mount a mobilization effort either under imminent threat of war or during an actual military conflict.

"Resource War" is a term used to characterize a presumed long-range Soviet strategy. I doubt that such a strategy exists. Since I am not an expert in geopolitics, I have no difficulty indulging the simple-minded belief that the Soviets do not require a resource excuse for exploiting any and all ready opportunities for enlarging their sphere of influence, so long as it does not cost them very much. I doubt that they harbor the illusion that they can inflict meaningful prolonged damage on the U.S. economy by interfering with our flow of material resources, even if they were ready to bear the cost of sustaining the economies of countries thus deprived of important sources of current income. Nor do I believe that the USSR is itself that desperate for any raw material that it would undertake retaliation-inviting kinds of measures to insure the supplies that it could just as well obtain on the open market or through bilateral trade and investment arrangements.

I am not alone in this kind of appraisal. I note, for example, in a recent Senate Foreign Relations Committee staff report (October 1982) on "U.S. Minerals Dependence on South Africa," the following statements:

> "A scenario in which the Soviets used direct force in South Africa or elsewhere in southern Africa to cut off minerals production or in which they interdicted shipping from the region would almost certainly take place in the context of much larger hostilities. Such hostilities would almost certainly involve the interruption of other supplies (e.g., oil from the Persian Gulf) which would dwarf in importance the problem of the loss of the four strategic minerals produced in South Africa. . . ."
>
> ". . . Unilateral Soviet action to cut off mineral exports from southern Africa to the West, weighed against other scenarios for disruption, would seem a highly improbable event in the foreseeable future . . . ."
>
> ". . . Even a takeover of South Africa by a black Marxist-leaning government at some time in the distant future was not deemed a major risk to our mineral supplies. There are no significant examples of Third World Marxist states withholding raw materials from world or U.S. markets for foreign policy reasons. . . ."

The same statement, I might add, could be made of the Soviet Union itself.

One need not posit a Resource War, however, to be concerned about possible interruptions of nonfuel mineral supply--or about possible attempts at organized price-gouging. One of the reasons for possible supply problems is mentioned in the staff report from which I just quoted: the risks engendered by revolutionary governments which mismanage, frighten off investment and skilled labor, and fall prey to unrealistic commercial expectations. Peacetime interruptions can also be the result of labor strikes, natural disasters, invasion or civil unrest, and occasional misguided attempts to utilize embargoes as political weapons. In wartime, the high concentration of certain critical minerals (notably chromium, platinum, manganese, and cobalt) in southern Africa poses accentuated risks of deliberate withholding or military interdiction, even though, as the report I just cited points out, oil movements from the Middle East would make a much more attractive target.

How should one evaluate such risks, and what should be done about them?

In the first place, one should distinguish between probable developments and unpredictable events, or contingencies. If we perceive certain long-range developments in progress--for example, ongoing shifts in supply, processing, or demand patterns--there is no great difficulty in adjusting to them. In fact, the businesses involved can generally be depended upon to do so without need for governmental assistance or interference. Cyclical fluctuations are another matter. Extremes of recession render materials supply industries unable or unwilling to pursue needed long-range expansion.

Extremes of worldwide boom send prices skyrocketing and strengthen the hand of would-be cartels. The occurrence of economic cycles is predictable, but their timing and amplitude are not. There is thus a potential, even if highly controversial, role that can usefully be played by governments in fostering a modicum of steady growth and stabilization in commodity markets.

The other kinds of risks I mentioned earlier--strikes, civil unrest, etc. --all have orders of probability too low, and uncertainties of timing too great, to permit much specific advance adjustment. Yet the probabilities are also too high to be ignored, and the events can all occur with little or no advance warning.

In respect of this last category of risks--the true contingencies--let me state another simple-minded bias: if there is any significant risk at all of a materials-supply interruption of a size and duration that could cause significant damage, it makes little difference whether the occurrence has low, medium, or high probability. Unless its likelihood is truly negligible, it is the size of the potential damage that counts and what it takes to insure against it. While elaborate procedures for estimating degrees of probability may embellish contingency planning with a satisfying aura of actuarial precision, we are not dealing here with the kinds of events that occur with statistical regularity. Moreover, such actuarial calculations are apropos for providers of insurance and not for the insured parties (including nations) on whom the odd disaster may actually descend.

In its broader sense, insurance comprehends avoidance of damage as well as the means to mitigate damage should it actually occur. Sometimes the same kinds of insurance will serve both ends: for example, the existence of a stockpile that can be called upon in a supply contingency will tend to discourage willful interruptions of supply by those seeking to achieve political or economic gain thereby. Other avoidance measures include reduction of dependence on particular raw materials and reduction of dependence on particular sources of supply. In addition to stockpiles, mitigation measures can include maintenance of standby capacity and of contingency plans for substitution, conservation, etc. to be put into effect at the time of an emergency.

All such insurance measures entail corresponding costs. Such costs, even if no more than the interest obligations on sunk capital, go on year after year, regardless of whether or not the contingency ever occurs.

Yet as any carowner or homeowner knows, insurance protection has a value which is independent of whether it is ever called upon. In a crude way, greater amounts of insurance (higher premiums) buy greater amounts of protection. But with nations as with homeowners, it is also true that incremental amounts of protection from damage are worth increasingly less, while the costs of such incremental amounts are increasingly more painful, and it is on this basis that a balance needs to be struck. What is additionally true for both homeowners and nations is that both insurance costs and damage are meaningful only in relation to the income and wealth to which they relate. Thus, recent low levels of Federal expenditure on Stockpile and other forms of materials supply insurance may be assumed to reflect the pain of additional expenditures within a badly unbalanced budget and not just explicit appraisal of the worth of additional increments of protection. We can only hope that the ability of the U.S. economy or potential war effort to absorb the uncovered damage is not being overlooked or underestimated in the equation.

There are obvious differences, in regard both to risk and to remedy, between the contingencies that might occur in peacetime and those that might occur in connection with a major military conflict. The distinction is not the same as that between civilian needs and that of the national security, since the bulk of military expenditures take place in peacetime (and are themselves a form of insurance against contingencies we hope will never occur). Rather it has to do with the behavior of materials-supply sources: the probability that they will not deliberately withhold in peacetime what some of them (including some, like South Africa, with which we are most critically concerned) might be unwilling or unable to deliver in wartime because of competing demands, disruptive internal events, blackmail, or deliberate enemy action. It also has to do with the relative criticality of interrupted supply, which will generally be lower, at the margin, in peacetime--for defense production as well as for production for civilian consumption.

It is the perception both of greater criticality in wartime and of greater risk that has led to the establishment of a defense stockpile, while no provision is made for peacetime materials insurance. This may well be appropriate policy, though I hesitate to relinquish the notion that the economic and social costs of some price or supply contingencies may not justify having stocks on hand or other mitigating measures ready for peacetime use as well.

I have deeper misgivings about both the criteria and the techniques used to determine how much materials insurance we need for wartime emergencies--in the form either of the National Defense Stockpile or of protection or subsidy for maintenance of domestic capacity. For stockpile planning purposes, consumption requirements are projected on the basis of certain assumptions ("scenarios") as to the kinds of wars for which we need to be prepared and as to the total dimensions of a mobilization economy. Coupled with appraisals of the probable wartime availability of supplies of given critical materials from various sources, these lead to Stockpile goals. Beyond these generalities, most of the details of the calculations are kept secret, and it may well be inadvisable to expose them to public view. One may wonder, however, about the fundamental appropriateness of a scenario approach, given the variability of findings according to kind of military contingency assumed, length of emergency to be provided for (currently specified by Congress), and postulated size of the nondefense economy. Obviously, since funding for only a small part of the shortfalls from Stockpile goals is provided for, not all portions of all goals are regarded as being of top priority. Might it not be in order to abandon the pretense of goals altogether and substitute estimates of how many years of all-out military effort, under "worst-case" assumptions, particular sizes of expenditures on Stockpile commodities might purchase?

It has often been pointed out that maintenance of domestic production or of standby capacity can substitute, in whole or in part, for stockpiling. This may well be true, in some instances, but it is important to guard against oversimplistic calculations. It has been asserted, for example, that one year's worth of capacity is equal to three years' worth of stockpile, but this can be misleading. At the very least, required capacity has to be equal to the peak year of mobilization shortfalls, not the average year. On the other side of the balance is the fact that a three-year stockpile may be presumed adequate for only three years of mobilization production, while a given amount of capacity provides for a mobilization of any length. The cost of stockpiled materials may be measured as a percentage of the purchase price, to cover interest (for correspondingly higher government debt), storage, and maintenance. Corresponding subsidies to maintain or protect domestic capacity may turn out to be a higher percentage of the amounts that would otherwise be spent for Stockpile acquisition. Stockpile acquisitions will be completed within a given time period, while the subsidies (in some cases taking the form of continuing government support purchases) may go on indefinitely, with no military emergency, happily, ever occurring. In short, meaningful comparisons can be made only through tricky calculations of present value. However, it may be said in general that for the domestic capacity alternative to be superior, either the subsidy element has to be quite limited or the actual occurrence of a mobilization emergency has to be regarded as quite imminent.

To the extent that we do look to the preservation of domestic capacity, I believe that mineral processing capacity is in most cases more critical than mine capacity. Probably our single most critical exposure right now is in respect to ferrochromium, of which South Africa alone accounts for more than two-thirds our total supply. For the main variety of ferrochrome there is only one remaining domestic producer, and that one apparently in trouble. South Africa also happens to account for about a third of world production of chromium ore (chromite) and two-thirds of world reserves, yet it would be practical to fall back upon a number of other ore sources (including domestic), if we had the processing capacity to match.

To revert, in conclusion, to the geopolitical theme, I do not think that our materials supply vulnerability is that critical or that devoid of other remedies that we need give it more than passing weight in our conduct of foreign relations. Such weight as we do give it should take the form, for example, of negotiating freer conditions of access for U.S. firms, including equitable enough treatment of investment as not to discourage U.S. exploration, mining, and processing enterprises in countries that may serve to diversify our sources of supply. There is no need to let materials concerns propel us into kinds of international behavior that are inconsistent with our ideals as a nation or with our lasting international stature.

Senator **Warner**. Gentlemen, we thank you very much. This has been an exceedingly helpful, instructive hearing. I for one will do my utmost to bring to the attention of my colleagues in the Senate the salient points that you have stressed today.

Again, I close with the statement that I opened with, and that is this Nation's national security in terms of ships and airplanes and tanks, can be no stronger than the foundation on which it rests, and part of that foundation is minerals and mining in the United States of America.

I am going to do my best to see what we can do to at least have some mineral capacity for production with as many of these strategic materials as possible here in the United States.

Thank you very much.

[Whereupon, at 12:35 p.m., the hearing was adjourned, subject to the call of the Chair.]

# GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS

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## MONDAY, JUNE 20, 1983

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
*Washington, D.C.*

The committee met, pursuant to notice, at 10:12 a.m., in room SD-366, Dirksen Office Building, Hon. James A. McClure, chairman, presiding.

Present: Senators McClure and Hecht.

Also present: Robert Terrell, professional staff member; D. Michael Harvey, chief counsel for the minority; and Linda Mason, professional staff member for the minority.

### OPENING STATEMENT OF HON. JAMES A. McCLURE, A U.S. SENATOR FROM THE STATE OF IDAHO

The CHAIRMAN. The committee will come to order. Today marks the second day of hearings before this committee on the subject of the geopolitics of strategic and critical materials.

I welcome the three panels of distinguished witnesses appearing before us today and look forward to the testimony which you will give.

Today's hearing will focus on the geopolitical implications of this Nation's growing dependence on foreign sources of strategic and critical minerals and the effects of such dependence now and into the future on those industries represented today.

While the witnesses appearing before us today represent some of our most important industries, I should point out that there are a number of other industries likewise affected. It is my intent in the coming weeks and months to hear from most if not all of them.

As I stated at the first meeting of this committee regarding this subject, the continued availability of adequate and secure supplies of strategic and critical minerals is essential to our survival as an industrialized democratic society. I am sure that most experts would agree that many of the countries from which we import significant quantities of strategic and critical minerals are considered less than secure sources. While the adequacy of supplies of such minerals from sources in central and southern Africa are not viewed as posing a problem, it is the security of access to those supplies into the future that could present a serious problem for the United States.

As most of us who follow the political and economic events taking place in the various source countries for which we depend for over 50 percent of half the 40 minerals considered vital to our multitrillion-dollar economy, we see clear and indisputable evidence of Moscow's influence. The Soviet Union and its surrogates—Cuban and East Germans most prominently—are dispersed throughout the world and especially in and around central and southern Africa where our mineral dependence is significant.

Let there be no doubt about their objective in being there. That objective is one that seeks to develop a viable strategic mineral denial strategy either through physical disruption, market manipulation, or domination of producer or neighboring states. The presence of over 30,000 Cuban troops in Angola threatens the stability of that region and is the primary stumbling block to resolving the Namibia independence issue.

Cuban military personnel are also present in Latin America, the Mideast, north Africa, and in Asia. Ambassador at Large Vernon A. Walters, in testifying before this committee regarding the geopolitics of strategic and critical materials on May 19, stated with respect to Cuba, and I quote, "Someone once said that Cuba is now the largest country in the world. The bureaucracy is in Havana, the government is in Moscow, the Army is in Africa, and the population is in Florida," end of quote.

It is imperative that the United States continue to diligently pursue its long-term interest in fostering democratic governments throughout the regions of central and southern Africa if we are to mitigate against further Soviet covert support for disruptive insurgent and dissident factions in these regions. As Ambassador Walters also stated on May 19 with respect to pursuing our long-term interests in these regions, and again I quote, "If we fall, there is no one else to pick up the torch of freedom and no one knows how long the night that would follow our fall would last," end of quote.

While pursuing foreign policy objectives directed toward establishing democracies and thereby enhancing the security of access to strategic and critical mineral supplies upon which we depend, we must be mindful of the effects of these policies on our domestic industries. One of the tools of foreign policy implementation is the monetary tool. Through international financing institutions such as the World Bank, the International Monetary Fund, and the International Finance Corporation, we loan money in support of mining development in lesser developed countries. On its face, this effort appears to be an effective one. Upon close examination, we find that many of the foreign mining projects funded through the aforementioned financial institutions have resulted in adverse impacts on our own domestic mining industry.

As I pointed out at our previous hearing on May 19, the International Finance Corporation had announced its intent to assist the Mexican Government in a $1 billion project to triple capacity at its copper operation just 30 miles south of the United States, this announcement coming at a time when our domestic copper industry is being devastated by world economic conditions and has been at a virtual shutdown in recent months.

I should point out that this is not an isolated example. The point is that we must be cognizant of the effects of our actions abroad where the term "free market" is absent from the vocabulary. The export of market efficiency must be a condition on the export of financial assistance.

It is the absence of a free market environment abroad that plagues much of our industry. Many countries subsidize production of strategic and critical minerals at facilities that would otherwise be uneconomical. Productive capacity is maintained or even increased for commodities for which there is no demand, thereby depressing world prices. It is more often than not that our own industries take the brunt of this by cutting domestic production.

Notwithstanding the concerns expressed concerning the conduct of our foreign policy and international finance, there are other important concerns as well. We will learn from the ferroalloy industry today of the steady decline of its industry as a result of low pricing and the growing increase of imports to the United States from abroad. Representatives from this industry believe that the situation is grave enough that in August of 1981 they requested the Commerce Department to investigate whether imports of ferroalloys constitutes a threat to our national security under section 232 of the Trade Expansion Act of 1962, commonly called the National Security Act.

The representatives here today from the domestic mining industry, the die casting industry, and the aerospace industry are concerned with the plight of the ferroalloy industry as well. The adverse impact on one of these industries is usually felt by all the others. They share as I do the concerns of import vulnerability from the standpoint of Soviet influence in and around producing countries, the security of sea lanes, the conduct of foreign policy, international finance, and our continuing attitude of self-inflicted self-denial.

I look forward to hearing the testimony of our distinguished witnesses in each of the panels today.

We will first hear from a panel consisting of Mr. George Watson, president of the Ferroalloy Association; Mr. John F. Collins, SKW Alloys, Inc.; Mr. John Trunzo, president of Elkem Metals Co.

Gentlemen, if you would please come forward and take your places at the table.

[The prepared statement of Senator McClure follows:]

STATEMENT OF
SENATOR JAMES A. McCLURE
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
JUNE 20, 1983

HEARING: "GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS"

GOOD MORNING. TODAY MARKS THE SECOND DAY OF HEARINGS BEFORE THIS COMMITTEE ON THE SUBJECT OF GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS. I WELCOME THE THREE PANELS OF DISTINGUISHED WITNESSES APPEARING BEFORE US TODAY AND LOOK FORWARD TO YOUR TESTIMONY.

TODAY'S HEARING WILL FOCUS ON THE GEOPOLITICAL IMPLICATIONS OF THIS NATION'S GROWING DEPENDENCE ON FOREIGN SOURCES OF STRATEGIC AND CRITICAL MINERALS AND THE EFFECTS OF SUCH DEPENDENCE NOW AND INTO THE FUTURE ON THOSE INDUSTRIES REPRESENTED TODAY. WHILE THE WITNESSES APPEARING BEFORE US TODAY REPRESENT SOME OF OUR MOST IMPORTANT INDUSTRIES, I SHOULD POINT OUT THAT THERE ARE A NUMBER OF OTHER INDUSTRIES LIKEWISE AFFECTED. IT IS MY INTENT IN THE COMING WEEKS AND MONTHS TO HEAR FROM MOST, IF NOT ALL, OF THEM.

AS I STATED AT THE FIRST MEETING OF THIS COMMITTEE REGARDING THIS SUBJECT, THE CONTINUED AVAILABILITY OF ADEQUATE AND SECURE SUPPLIES OF STRATEGIC AND CRITICAL MINERALS IS ESSENTIAL TO OUR SURVIVAL AS AN INDUSTRIALIZED DEMOCRATIC SOCIETY. I AM SURE THAT MOST EXPERTS WOULD AGREE THAT MANY OF THE COUNTRIES FROM WHICH WE IMPORT SIGNIFICANT QUANTITITES OF STRATEGIC AND CRITICAL MINERALS ARE CONSIDERED LESS THAN SECURE SOURCES. WHILE THE ADEQUACY OF SUPPLIES OF SUCH MINERALS FROM SOURCES IN CENTRAL AND SOUTHERN AFRICA ARE NOT VIEWED AS POSING A PROBLEM, IT IS THE SECURITY OF ACCESS TO THOSE SUPPLIES INTO THE FUTURE THAT COULD PRESENT A SERIOUS PROBLEM FOR THE UNITED STATES.

AS MOST OF US WHO FOLLOW THE POLITICAL AND ECONOMIC EVENTS TAKING PLACE IN THE VARIOUS SOURCE COUNTRIES FOR WHICH WE DEPEND FOR OVER 50 PERCENT OF HALF THE FORTY MINERALS CONSIDERED VITAL TO OUR MULTI-TRILLION DOLLAR ECONOMY, WE SEE CLEAR AND INDISPUTABLE EVIDENCE OF

MOSCOW'S INFLUENCE. THE SOVIET UNION AND ITS SURROGATES -- CUBAN AND EAST GERMANS MOST PROMINENTLY -- ARE DISPERSED THROUGHOUT THE WORLD AND ESPECIALLY IN AND AROUND CENTRAL AND SOUTHERN AFRICA WHERE OUR MINERAL DEPENDENCE IS SIGNIFICANT. LET THERE BE NO DOUBT ABOUT THEIR OBJECTIVE IN BEING THERE. THAT OBJECTIVE IS ONE THAT SEEKS TO DEVELOP A VIABLE STRATEGIC MINERAL DENIAL STRATEGY, EITHER THROUGH PHYSICAL DISRUPTION, MARKET MANIPULATION, OR DOMINATION OF PRODUCER OR NEIGHBORING STATES.

THE PRESENCE OF OVER 30,000 CUBAN TROOPS IN ANGOLA THREATENS THE STABILITY OF THAT REGION AND IS THE PRIMARY STUMBLING BLOCK TO RESOLVING THE NAMIBIA INDEPENDENCE ISSUE. CUBAN MILITARY PERSONNEL ARE ALSO PRESENT IN LATIN AMERICA, THE MIDEAST AND NORTH AFRICA AND IN ASIA. AMBASSADOR-AT-LARGE VERNON A. WALTERS, IN TESTIFYING BEFORE THIS COMMITTEE REGARDING THE GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS ON MAY 19 STATED, WITH RESPECT TO CUBA -- AND I QUOTE:

> " SOMEONE ONCE SAID THAT CUBA IS NOW THE LARGEST COUNTRY IN THE WORLD. THE BUREAUCRACY IS IN HAVANA, THE GOVERNMENT IS IN MOSCOW, THE ARMY IS IN AFRICA, AND THE POPULATION IS IN FLORIDA..."

IT IS IMPERATIVE THAT THE UNITED STATES CONTINUE TO DILIGENTLY PURSUE ITS LONG-TERM INTEREST IN FOSTERING DEMOCRATIC GOVERNMENTS THROUGHOUT THE REGIONS OF CENTRAL AND SOUTHERN AFRICA IF WE ARE TO MITIGATE AGAINST FURTHER SOVIET COVERT SUPPORT FOR DISRUPTIVE INSURGENT AND DISSIDENT FACTIONS IN THESE REGIONS. AS AMBASSADOR WALTERS ALSO STATED ON MAY 19, WITH RESPECT TO PURSUING OUR LONG-TERM INTERESTS IN THESE REGIONS --

> "IF WE FALL, THERE IS NO ONE ELSE TO PICK UP THE TORCH OF FREEDOM AND NO ONE KNOWS HOW LONG THE NIGHT THAT WOULD FOLLOW OUR FALL WOULD LAST."

WHILE PURSUING FOREIGN POLICY OBJECTIVES DIRECTED TOWARDS ESTABLISHING DEMOCRACIES AND THEREBY ENHANCING THE SECURITY OF

ACCESS TO STRATEGIC AND CRITICAL MINERAL SUPPLIES UPON WHICH WE DEPEND, WE MUST BE MINDFUL OF THE EFFECTS OF THESE POLICIES ON OUR DOMESTIC INDUSTRIES. ONE OF THE TOOLS OF FOREIGN POLICY IMPLEMENTATION IS THE MONETARY TOOL. THROUGH INTERNATIONAL FINANCING INSTITUTIONS SUCH AS THE WORLD BANK, THE INTERNATIONAL MONETARY FUND AND THE INTERNATIONAL FINANCE CORPORATION, WE LOAN MONEY IN SUPPORT OF MINING DEVELOPMENT IN LESSER DEVELOPED COUNTRIES. ON ITS FACE, THIS EFFORT APPEARS TO BE AN EFFECTIVE ONE. UPON CLOSE EXAMINATION, WE FIND THAT MANY OF THE FOREIGN MINING PROJECTS FUNDED THROUGH THE AFOREMENTIONED FINANCIAL INSTITUTIONS HAVE RESULTED IN ADVERSE IMPACTS ON OUR OWN DOMESTIC MINING INDUSTRY. AS I POINTED OUT AT OUR PREVIOUS HEARING ON MAY 19, THE INTERNATIONAL FINANCE CORPORATION HAD ANNOUNCED ITS INTENT TO ASSIST THE MEXICAN GOVERNMENT IN A ONE BILLION DOLLAR PROJECT TO TRIPLE CAPACITY AT ITS COPPER OPERATION JUST THIRTY MILES SOUTH OF THE UNITED STATES. THIS ANNOUNCEMENT COMING AT A TIME WHEN OUR DOMESTIC COPPER INDUSTRY IS BEING DEVASTATED BY WORLD ECONOMIC CONDITIONS AND HAS BEEN AT A VIRTUAL SHUTDOWN IN RECENT MONTHS. I SHOULD POINT OUT THAT THIS IS NOT AN ISOLATED EXAMPLE. THE POINT IS, WE MUST BE COGNIZANT OF THE EFFECTS OF OUR ACTIONS ABROAD WHERE THE TERM "FREE MARKET" IS ABSENT FROM THE VOCABULARY. THE EXPORT OF MARKET EFFICIENCY MUST BE A CONDITION ON THE EXPORT OF FINANCIAL ASSISTANCE.

IT IS THE ABSENCE OF A FREE MARKET ENVIRONMENT ABROAD THAT PLAGUES MUCH OF OUR INDUSTRY. MANY COUNTRIES SUBSIDIZE PRODUCTION OF STRATEGIC AND CRITICAL MINERALS AT FACILITIES THAT WOULD OTHERWISE BE UNECONOMICAL. PRODUCTIVE CAPACITY IS MAINTAINED OR EVEN INCREASED FOR COMMODITIES FOR WHICH THERE IS NO DEMAND THEREBY DEPRESSING WORLD PRICES. IT IS MORE OFTEN THAN NOT THAT OUR OWN INDUSTRIES TAKE THE BRUNT OF THIS BY CUTTING DOMESTIC PRODUCTION.

NOTWITHSTANDING THE CONCERNS EXPRESSED CONCERNING THE CONDUCT OF OUR FOREIGN POLICY AND INTERNATIONAL FINANCE, THERE ARE OTHER

IMPORTANT CONCERNS AS WELL. WE WILL LEARN FROM THE FERROALLOY INDUSTRY TODAY OF THE STEADY DECLINE OF ITS INDUSTRY AS A RESULT OF LOW PRICING AND THE GROWING INCREASE OF IMPORTS TO THE UNITED STATES FROM ABROAD. REPRESENTATIVES FROM THIS INDUSTRY BELIEVE THAT THE SITUATION IS GRAVE ENOUGH THAT IN AUGUST OF 1981 THEY REQUESTED THE COMMERCE DEPARTMENT TO INVESTIGATE WHETHER IMPORTS OF FERROALLOYS CONSTITUTES A THREAT TO OUR NATIONAL SECURITY UNDER SECTION 232 OF THE TRADE EXPANSION ACT OF 1962, COMMONLY CALLED THE "NATIONAL SECURITY ACT."

THE REPRESENTATIVES HERE TODAY FROM THE DOMESTIC MINING INDUSTRY, THE DIE CASTING INDUSTRY AND THE AEROSPACE INDUSTRY ARE CONCERNED WITH THE PLIGHT OF THE FERROALLOY INDUSTRY AS WELL. THE ADVERSE IMPACTS ON ONE OF THESE INDUSTRIES IS USUALLY FELT BY ALL THE OTHERS. THEY SHARE AS I DO, THE CONCERNS OF IMPORT VULNERABILITY FROM THE STANDPOINT OF SOVIET INFLUENCE IN AN AROUND PRODUCING COUNTRIES, THE SECURITY OF SEA LANES, THE CONDUCT OF FOREIGN POLICY, INTERNATIONAL FINANCE, AND OUR CONTINUING ATTITUDE OF SELF-INFLICTED SELF-DENIAL.

I LOOK FORWARD TO HEARING THE TESTIMONY OF OUR DISTINGUISHED WITNESSES.

Mr. WATSON. Thank you, Mr. Chairman. I am George Watson, and with me is Jack Collins and John Trunzo as you introduced them.

I would like to scope our talks today and depart a little bit from the written testimony that has been submitted if I may do so?

The CHAIRMAN. Your entire statement will be placed in the record in full. You are invited to summarize in whatever way you would like.

Mr. WATSON. And to save time I will try to do that, sir.

The CHAIRMAN. Yes, sir.

## STATEMENT OF GEORGE A. WATSON, PRESIDENT, THE FERROALLOYS ASSOCIATION

Mr. WATSON. We very much appreciate this opportunity to appear here and to present to you the particular problems of the ferroalloy industry and the role that we play in assuring our country of an adequate and economic supply of chromium and manganese as well as silicon ferroalloys. They are absolutely essential in peace and in war and emergency times.

The previous witnesses bear testimony to the importance of chromium and manganese to our economy and our national security. This industry began at the turn of the century in Glen Ferris, and in 1898 produced the first ferrochrome for the Spanish-American War. The industry has continuously produced ferrochrome from that date until May 26 of this year when our last ferrochrome furnace stopped producing ferrochrome in this country. There are nine furnaces idle.

High carbon ferromanganese has a similar history. It started in World War II. We had twelve furnaces that produced over 300,000 tons a year as well as blast furnaces. Today we are down to one furnace that produces probably about less than 5 percent of our Nation's needs in ore and ferromanganese, and even our ferrosilicon producers who used essentially the same furnaces for making chrome and manganese are in serious trouble with low-priced imports over 25 percent of the ferrosilicon business and over 95 percent of the ferrochrome and ferromanganese business.

Over the years since its inception of production, our industry has been able to obtain all of the chrome and manganese ore it has ever needed for production. We have never lost production because of a lack of chromium or manganese ores. In World War II we actually increased our stockpile of chrome and manganese ore during the war but we had to allocate ferrochrome and ferromanganese for lack of furnace capacity.

During the cold war, the cutoff of manganese ore from Russia was rapidly replaced with ores from Africa, Brazil, and Australia, and following the Rhodesian sanctions—and there is a mistake in my written testimony—we supplemented sharply increased ore supplies from Finland, Albania and Turkey with excess chrome ore from the national stockpile and never had a real shortage.

Curiously enough, in 1973, the boom period, the demand for ferroalloys zoomed. We had plenty of ore but not enough furnace capacity, and at that time the importers took advantage of the market as their prices soared to double the domestic prices. We sold ferrochrome for about 50 cents a pound. The foreigners charged a dollar. If our steel industry needed ferrochrome beyond what we had the capacity to supply, that is what they had to pay in peacetime. We don't know what the situation would be in an emergency. We have always been as a country and an industry dependent upon foreign sources for chromium and manganese ore, and there are some people who say that dependence for chrome and manganese is no problem. It doesn't make any difference whether we depend upon chrome ore or ferrochrome, manganese ore or ferromanganese, but there is a considerable difference on that import dependence, and it has a rather critical aspect, and that is the degree of vulnerability to supply interruptions.

From the standpoint of concern for national security, there is a tremendous difference between dependence on processed materials and dependence on raw materials. Just reflect in 1973 in the oil crisis suppose we had no refineries for crude oil which we can get from any place for gasoline and fuel oil? It would have been a considerably different story. When any nation has a viable smelting capacity, it can satisfy its needs so long as it can obtain or have the raw material, and we never lack for obtaining raw material.

We seem to be as a country embarked upon a rather hazardous path leading to a loss of much of our primary smelting. We see it not only in ferroalloys but we see it in steel, aluminum, and nonferrous metals just as you referred recently to copper, sir, and we are becoming more and more dependent upon processed products which greatly increases our vulnerability to supply interruptions. Without the furnace capacity to produce ferroalloys, the Nation's supply options would decrease to those countries possessing capacity, and importantly, the willingness or ability to supply our needs, and I would reflect that very soon unless something changes we will be dependent upon the Republic of South Africa and Zimbabwe for a major portion of these processed materials.

The present almost complete dependency on foreign processing of chromium and major ores is a needless risk to our national security and also exposes our economy to the probability of exorbitant prices in peacetime as I referred previously to 1973. It is interesting to note that Japan and Europe look at this a little differently. During the Infacon meeting in Tokyo last month, Mr. Eishiro Saito, and I am not sure I pronounced that Japanese correctly, the Chairman of the Japan Iron and Steel Federation and Hippon Steel Corp., stated this publicly, and I quote.

"I would like to emphasize that in view of the importance of the ferroalloy industry to the national economy as a whole and the need to maintain and develop national security and technology, every nation must keep its ferroalloy industry viable at an appropriate scale," and our Government's only response to the ferroalloy crisis in this country has been the recently announced program to convert some of the chrome and manganese ore in the stockpile to ferroalloys, a program that will only prolong the death throes of the domestic ferroalloy industry.

From a broader standpoint than our parochial views on the ferroalloy industry, we believe that the time has come for our Government to recognize the reality of the world today and that we cannot and we must not allow our smokestack industries to be sacrificed on the altar of free trade in the vain hope that high-technology industries and management skills can replace the jobs lost.

We do know it is important that the developing countries develop their industries in order to help our exported, but when our basic industries are so reduced as to threaten the national security, a line must be drawn and corrective measures taken, free trade notwithstanding.

We believe as you stated earlier that the time has come to reexamine our Federal policies and recommend legislation leading to the revitalization of our mining and mineral processing industries which are the foundation of our economy, the source of our industrial strength, and the backbone of our national security.

I thank you for the opportunity, sir, to make the statement, and I will be ready to answer questions when the other panelists are through.

[The prepared statement of Mr. Watson follows:]

# STATEMENT

By

George A. Watson, President
THE FERROALLOYS ASSOCIATION

Before

THE COMMITTEE ON ENERGY AND NATURAL RESOURCES
U. S. SENATE

June 20, 1983
Washington, D. C.

Thank you, Mr. Chairman. I am George Watson, President of The Ferroalloys Association and accompanying me, today, are Mr. John P. Trunzo, President of Elkem Metals Company of Pittsburgh, Pennsylvania and Mr. John F. Collins, President of SKW Alloys, Inc. of Niagara Falls, New York. We appreciate this opportunity to present to the Committee some of the problems affecting the domestic ferroalloy industry which processes minerals containing chromium, manganese and silicon to produce the ferroalloys and metals necessary for the production of a great variety of iron, steel, aluminum and superalloy products essential to our industrial and military strength. We would like to address ourselves particularly to our role in assuring our country of an adequate and economical supply of these strategic and critical ferroalloys in times of peace or national emergency.

There is no question as to the importance of ferroalloys to the national security. Previous witnesses before this Committee have spoken eloquently of the importance of chromium and manganese to our military and economic strength and expressed great concern as to our ability to be assured of an adequate supply at a reasonable cost not only during an emergency but in peacetime as well. Our testimony before this Committee will address itself to one particular facet of this problem--the necessity for a domestic capacity to process minerals critical to the national security.

The ferroalloy industry began in 1892 at Glen Ferris, W. Va., and a few years later produced the first ferrochrome for use in the Spanish-American War. Since that time, ferrochrome has been produced continuously until this month when the last of our 9 furnaces producing this product shut down. Electric furnace ferromanganese production began during World War I but, today, only one of a total of 12 furnaces is producing H.C.Ferromanganese. Future production from any of these furnaces is extremely uncertain due to a flood of imports which has captured over 95 percent of the demand for those products. Even ferrosilicon producers, not dependent on any foreign-sourced raw material, are in serious trouble from low-priced imports which have captured over 25 percent of that market.

At this point we would like to introduce for the record a detailed technical description of ferroalloy production which points up the unique flexibility of the submerged arc furnaces used for the production of chromium, manganese and silicon ferroalloys and the need to preserve furnace capacity in the name of national security.

Over the years since its inception, the ferroalloy industry has been able to obtain chrome and manganese ores from many world sources and has never experienced a crippling shortage of ores needed for production. In fact, in past emergency situations and in boom times, such as 1973, the problem was a lack of furnace capacity to convert available raw material to ferroalloys--not a shortage of imported ores. In World War II, we actually increased our ore stockpile while having to allocate ferrochrome and ferromanganese. During the "Cold War", the cut-off of manganese ore from Russia was rapidly replaced with ores from Africa, Brazil and Australia. Following the Rhodesian sanctions in 1976, the industry supplemented sharply increased ore supplies from Russia and Turkey with excess chrome ore from the national stockpile and was able to meet the demand for ferrochrome. In 1973, when the demand for all ferroalloys zoomed to record heights, imported ores were in adequate supply but furnace capacity was limited resulting in a severe shortage that permitted the prices for imported ferroalloys to soar to over double the domestic producer's prices.

While our country has always been dependent on foreign sources for chromium and manganese, that dependency has shifted from ores to ferroalloys. There are some who say this is no problem and what difference does it make if we import ferroalloys rather than ore particularly, if imported ferroalloys are cheaper than domestic ferroalloys for whatever the reasons be it subsidies, dumping, or, as in the case today, the high value of the dollar. But import dependence whether for ore or ferroalloy has another more critical aspect and that is the degree of vulnerability to supply interruptions.

From the standpoint of concern for the national security, there is a tremendous difference between dependence on processed materials and dependence on raw materials. Grave as is our reliance on foreign crude oil, just imagine how much worse it would have been in 1973 if we had had little or no capacity to refine crude oil. When a nation has a viable smelting or refining capacity, it can satisfy its essential needs so long as it can obtain or has the raw materials. It is of grave concern to many that the United States seems to be embarked on a hazardous path leading to the loss of much of its primary smelting capacity not only in ferroalloys but also in the steel, aluminum and some non-ferrous metals industries and becoming more and more dependent on processed products thus increasing vulnerability to supply interruptions.

Without the furnace capacity to produce ferroalloys, the nation's supply options would decrease to those countries possessing processing capacity and the willingness or ability to supply our needs. Without a domestic ferroalloy processing capacity, it would be useless to search for ore deposits, either in our country or elsewhere, and the ores in the national stockpile would be a pile of useless rocks. The present almost complete dependency on the foreign processing of chromium and manganese ores to ferroalloys is a needless risk to the national security and additionally exposes our economy to the probability of exorbitant pricing of imports during future periods of high demand.

Japan and Europe, with an import dependence greater than ours, have recognized the importance of domestic ferroalloy capacity and have taken steps to preserve that capacity by a variety of measures that serve their interests. During the "Infacon" meeting in Tokyo this last May, Mr. Eishiro Saito, Chairman of both the Japan Iron and Steel Federation and Hippon Steel Corporation stated,

> "I would like to emphasize that in view of the importance of the ferroalloy industry to the national economy as a whole and the need to maintain and develop national security and technology, every nation must keep its ferroalloy industry viable at an appropriate scale."

And our government's only response to the ferroalloy crisis has been the recently announced program to convert some of the chrome and manganese ores in the stockpile to ferroalloys--a program that will only prolong the death throes of the domestic ferroalloy industry.

At this point, Mr. Chairman, we would like to submit for the record a recently prepared paper reviewing our industry's efforts to have the Administration recognize the importance of ferroalloy furnace capacity to the national security and requesting that appropriate steps be taken to assure its continued viability.

From a broader standpoint than our parochial views on the ferroalloy industry, we believe the time has come for our government to recognize the realities of the world today and that we cannot--and we must not--allow our basic smokestack industries to be sacrificed on the alter of free trade in the vain hope that high technology industries and management skills can replace the jobs lost to nations having great expectations for their development at our expense. We do know the development of industry in other countries is important for our exports and international trade, but when our basic industries are so reduced as to threaten the national security, a line must be drawn and corrective measures taken--free trade not withstanding.

We believe, as you have stated, that the time has come to reexamine our federal policies and recommend legislation leading to the revitalization of our basic mining and mineral processing industries which are the foundation of our economy, the source of our industrial strength and the backbone of our national security.

December 6, 1982

## FERROALLOY PRODUCTION IN THE UNITED STATES

The submerged arc electric smelting furnace (SAF) is used primarily for the production of various chromium, manganese and silicon ferroalloys and metals as well as for the production of calcium carbide, pig iron and ferronickel. A special design of the furnace is used to produce elemental phosphorous and ferrophosphorous as a by-product. The only major tonnage ferroalloy not produced exclusively in the SAF is high-carbon ferromanganese from a conventional blast furnace which, in time, will be replaced by the more efficient and economical SAF.

In the United States, there are 84 SAF's in existence for ferroalloy production that, generally speaking, can produce any of the following products:

High-carbon ferrochrome
Ferrochrome silicon
High-carbon ferromanganese
Silicomanganese
Ferrosilicon
Silicon Metal

Products such as low and medium carbon ferromanganese, low carbon ferrochrome and magnesium ferrosilicon are either refined from SAF products by additional processing in open arc furnaces or by ladle treatment of the SAF product. Chromium and manganese metal are produced by aluminothermic or electrolytic processes.

The SAF process dates back to the turn of the century when ferrochrome and ferrosilicon were first offered to the steel industry. Today, only the SAF process is used to produce these ferroalloys because the high temperatures required for the reduction of the oxides of chromium, silicon and calcium can be attained only by an electric arc. Manganese oxide can be reduced to metal in a blast furnace but for reasons of economy and efficiency, the SAF is now the favored process.

The general design of the SAF for the production of chromium, manganese and silicon ferroalloys is shown in the schematic diagram in Exhibit "A" from the EPA report "Engineering and Cost Study of the Ferroalloy Industry" issued in 1975. Raw materials, ore and reducing agent are charged more or less continuously into the top of the furnace and around the electrodes. Molten ferroalloy is produced on the hearth and tapped intermittantly as the metal accumulates to the desired level.

Over the years, the SAF's have evolved into two basic designs--either closed or open--and have grown in size to furnaces integrating as much as 60 megawatts of power load for production. Exhibit "B" from a catalogue published by Elkem Spigerverket in Norway discusses the two general types and the type generally preferred for particular products. Today, furnaces are built for the production of specific products and the design modified to maximize efficiency at some sacrifice in production flexibility. The basic open furnace as employed extensively in the United States is most flexible in production and if costs were no criterion, could make any SAF ferroalloy. The subject of furnace flexibility was studied by Battelle Columbus Laboratories for EPA in 1975 and the executive summary is attached as Exhibit "C."

In the United States, SAF's range from 7 to 45 megawatts in size in twenty-five plants containing from one to ten furnaces producing a variety of chromium, manganese and silicon ferroalloys. Three of these plants produce silicon metal for captive use in aluminum or silicone chemicals production. Table I summarizes the present status of installed SAF capacity even though most furnaces are not operating.

Table I.

| Product Normally Produced | No of Saf's | Size Range of SAF's in MW | | | Total MW Capacity | Capacity 000 S.T. Product |
|---|---|---|---|---|---|---|
| | | 0-10 | 10-20 | Ov 20 | | |
| H.C.FeMn | 11 | 7 | 4 | -0- | 102 | 274 |
| SiMn | 9 | -0- | 7 | 2 | 166 | 272 |
| H.C.FeCr | 10 | 6 | 2 | 2 | 180 | 265 |
| FeCrSi | 4 | 2 | 1 | 1 | 53 | 58 |
| FeSi | 29 | 5 | 10 | 14 | 623 | 849 |
| Si Metal | 21 | 2 | 18 | 1 | 358 | 197 |
| Total | 84 | 22 | 42 | 20 | 1482 | 1915 |

Over the years, the U.S. ferroalloy industry has continually upgraded its efficiency and has replaced many small furnaces with larger and more modern units. Even many of the small furnaces (0-10 MW) listed in the above table have been modernized and are efficient production units.

This table clearly shows the importance of silicon products to the industry with one-half the furnaces and two-thirds of the MW capacity committed to those products. And all the silicon product capacity can produce chromium and manganese products in a national emergency situation.

Silicon product capacity is the backbone of the ferroalloy industry. All but two of the twenty-five plants have, at one time or another, produced ferrosilicon and seventeen of them normally produce only silicon products. Silicon production is power intensive and forms the base for power contracts. All the necessary raw materials and supplies for production are available from domestic sources.

In the past several years, imports of silicon products, particularly the 60 to 80 percent silicon grade have increased sharply from 2% in 1970 to 26% in 1981 and this year are at the rate of 29% of the apparent market. Not only has the volume of imports increased sharply but because of the importers desire to invade the U.S. market, prices have been severely depressed and suppressed to the point of destroying the domestic producers' profitability and endangering their existence.

From the standpoint of national security, the threat posed by silicon imports is the most serious of our concerns. So long as our nation has a strong and viable silicon industry, it has the means to produce both ferrochrome and ferromanganese in any future emergency. Without a strong silicon industry, our dependency on imports for all ferroalloys will increase and demand even more building up of our national stockpile at great expense to the budget.

The application of our suggested breakpoint price for ferroalloys would go far to relieve the pressure from imports especially in the silicon group where resources are not a consideration.

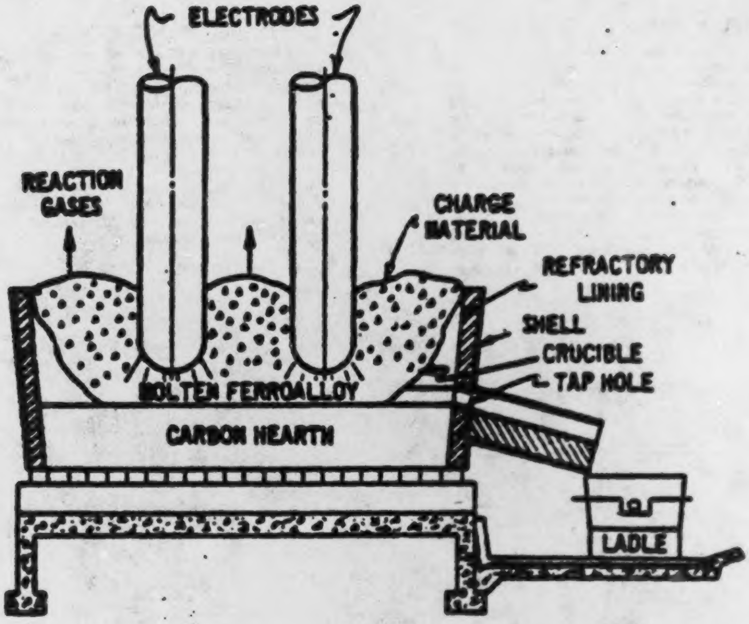

ELECTRODES
REACTION GASES
CHARGE MATERIAL
REFRACTORY LINING
SHELL
CRUCIBLE
TAP HOLE
MOLTEN FERROALLOY
CARBON HEARTH
LADLE

Figure V-1. Submerged-arc furnace for ferroalloy production.

## Open Furnaces

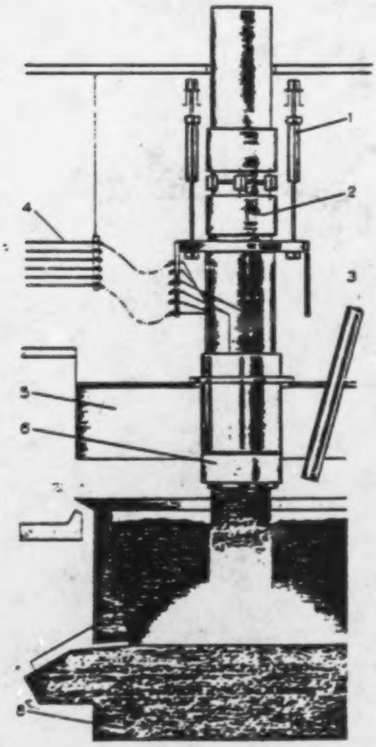
Open furnaces are mainly used for silicon alloys, where the furnace operation requires access to the top of the burden. In order to reduce gas volumes and minimize cost of gas filter installations, the furnace may be delivered as a semi-closed furnace with side walls of hood extending down to top of furnace shell. Access to burden through sliding door. Charging by machine through same doors or by gravity from overhead bins and chutes. The secondary current leads are connected to electrodes through flexibles above the hood. Cylindrical design of electrode holder below hood with no protruding parts provide maximum selv-protection to hot furnace atmosphere. The furnace can be either rotating or stationary.

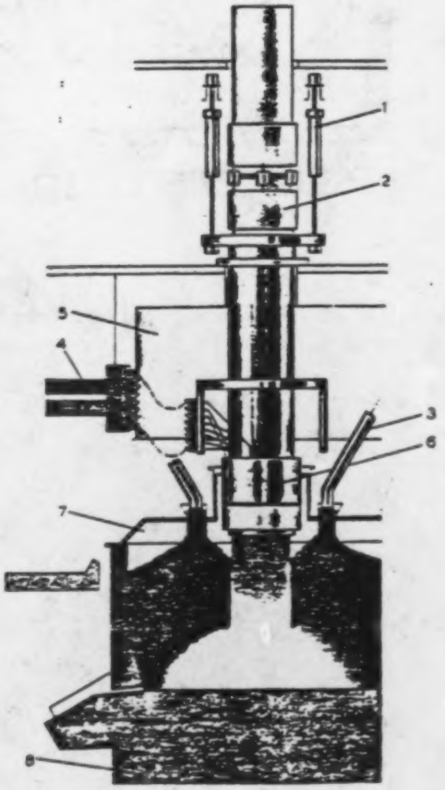
EXHIBIT B

## Closed Furnaces

Closed furnaces are used for smelting processes where the operation does not require working of the furnaces burden by stoking and raking. The furnace is provided with a cover allowing collection of the furnace gases, which have a considerable calorific value. The gases can be used for general heating purposes or as fuel for thermal pretreament of the furnace charge.

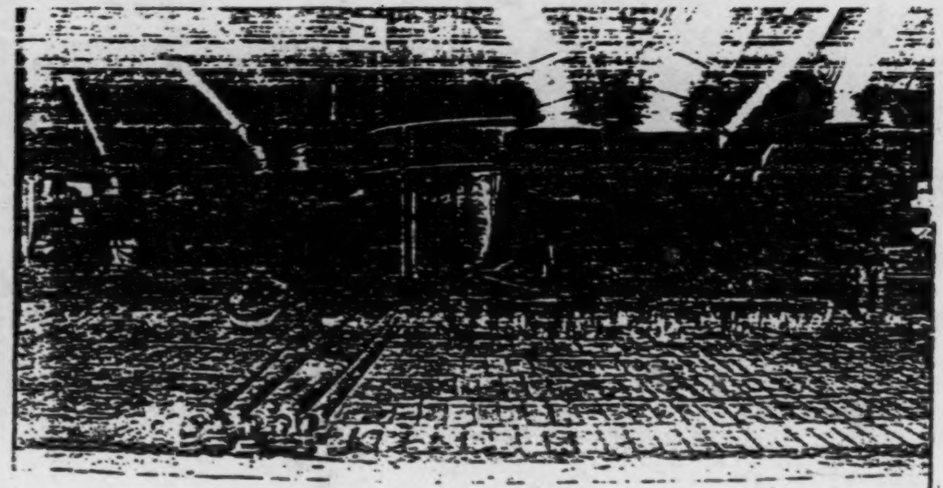
The furnace top remains clean and cool, thus requiring little maintenance on electrode equipment due to reduced heat strain. Comfortable working conditions around furnace.





**Legend**

1 Electrode hoist
2 Electrode slipping
3 Charging chute
4 Secondary current
5 Smoke hood
6 Contact assembly
7 Furnace cover
8 Furnace body



Furnace cover with charging shafts on a 48.000 kVA FeCr-furnace.

# Chromium Alloys

High process temperature is required for smelting of chromium alloys. Therefore electric smelting furnaces are advantageous for the production of such alloys. Due to the type of gangue minerals in chromium ores, the smelting of chromium alloys is associated with slag problems which impose special demands on the equipment.

H. C. FeCr and charge-chrome can be produced in closed, stationary hearth furnaces, whereas direct production of SiCr is still usually carried out in open top, rotating hearth furnaces. Equipment to meet the emmission problems is supplied by the Engineering Division.

Preheating processes have been adapted for H. C. FeCr with good results and the use of chromium ore agglomerates is increasing. Power consumption can be reduced by 25–50 % when preheating prereduction is applied.

| **Type of furnace*)** | **All closed, rotating (alt. stationary)** | | | | |
|---|---|---|---|---|---|
| Transformer cap. kVA | 7.500 | 12.000 | 18.000 | 30.000 | 48.000 |
| Nominal load kW | 6.500 | 10.000 | 15.000 | 24.000 | 35.000 |

*) For production of SiCr an open type furnace is normally used.

| Approx. annual production in m. tons: | | | | | |
|---|---|---|---|---|---|
| a) H. C. FeCr | 11.000 | 17.000 | 25.000 | 45.000 | 60.000 |
| b) SiCr (40–45 % Si) | 7.000 | 10.000 | 16.000 | 25.000 | 35.000 |

**Normal operational figures per metric ton of product:**

| Product | | H.C. FeCr | FeSiCr |
|---|---|---|---|
| Cr-ores | kgs | 2.000 – 2.600 | 1.200 |
| Quartz | kgs | | 1.100 |
| Reductants | kgs | 550 – 650 | 850 |
| Fluxes | kgs | 0 – 300 | 0 – 300 |
| Electric power | kWh | 4000 – 5.000 | 7.000 – 8.000 |
| Electrode paste | kgs | 25 – 45 | 40 – 60 |
| Gas production | Nm³ | 700 – 900 | – |
| Calorific value | kcal/Nm³ | 2.000 – 2.400 | – |
| Dust content before cleaning | g/Nm³ | 20 – 150 | – |
| Dust content after cleaning | mg/Nm³ | 20 – 50 | – |

# Manganese Alloys

Covered electric smelting furnaces take over more and more the production of FeMn and SiMn.

As can be seen from the table below, ELKEM furnaces are delivered in a variety of sizes to suit specific requirements. The production capacity of a given furnace varies, of course, with the quality of the raw materials and process procedures selected. The ore can be reduced in one step to give H. C. FeMn and a «throw away» slag. This, however, decreases the capacity of the furnace as compared to the method of using a partial reduction to give a slag with high MnO content. This slag can then be used as raw material for subsequent SiMn production. SiMn can be produced advantageously in a rotating hearth furnace.

In order to reduce power consumption, preheating and partial prereduction of the manganese ore prior to smelting has been successfully employed at some FeMn plants.

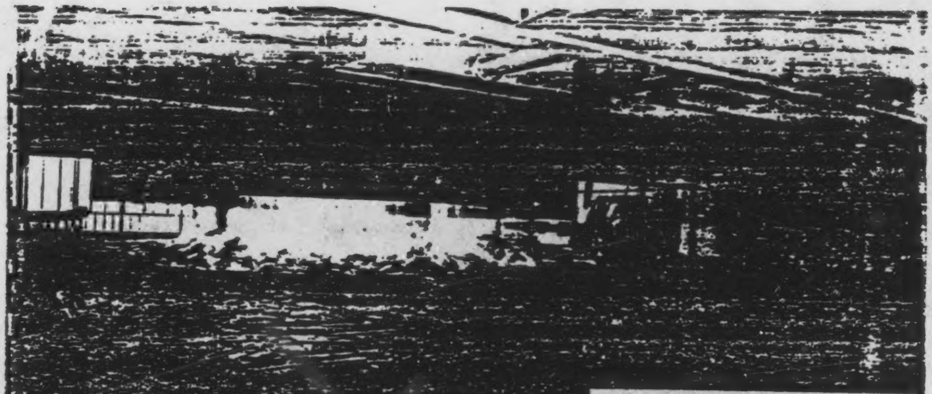
48.000 kVA ELKEM FeMn furnace

Furnace control room.

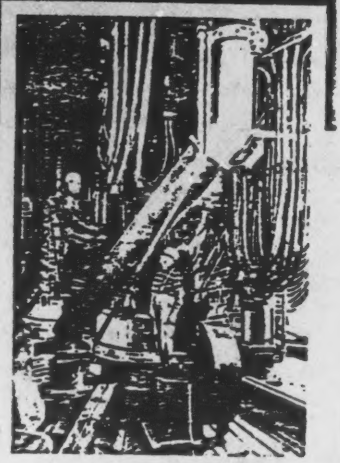
| Type of furnace | Closed, stationary (alt. rotating) | | | | | |
|---|---|---|---|---|---|---|
| Transformer cap. kVA | 9.000 | 13.000 | 24.000 | 36.000 | 48.000 | 60.000 |
| Nominal load kW | 7.500 | 10.000 | 18.000 | 26.000 | 32.000 | 38.000 |
| Approximate annual production in m tons. | | | | | | |
| a) H. C. FeMn (75-80 % Mn). | 20.000 | 30.000 | 50.000 | 75.000 | 90.000 | 100.000 |
| b) SiMn (16-22 % Si) | 12.000 | 16.000 | 30.000 | 40.000 | 50.000 | 60.000 |

**Normal operational figures per metric ton of product:**

| Product | | FeMn | SiMn |
|---|---|---|---|
| Mn-ores | kgs | 1.900 – 2.500 | 1.000 – 1.800 |
| Reductants | kgs | 400 – 500 | 480 – 550 |
| High MnO slag | kgs | – | 0 – 1.500 |
| Quartzite | kgs | 0 – 100 | 150 – 600 |
| Fluxes (limestone, dolomite) | kgs | 0 – 500 | 0 – 400 |
| Electric power | kWh | 2.300 – 3.000 | 4.200 – 5.500 |
| Electrode paste | kgs | 6 – 18 | 25 – 45 |
| Gas production | $Nm^3$ | 600 – 800 | 800 – 1.000 |
| Calorific value | $kcal/Nm^3$ | 1.200 – 2.200 | 2.000 – 2.500 |
| Dust content before cleaning | $g/Nm^3$ | 20 – 150 | 50 – 150 |
| Dust content after cleaning | $mg/Nm^3$ | 20 – 50 | 20 – 50 |



39.000 kVA ELKEM FeSi-furnace - view of furnace floor.



Inspecting electrode equipment above smoke-hood roof.

# Silicon Alloys

Today the different grades of FeSi as well as «silvery pig» and Si metal are produced only in electric smelting furnaces. The parameters of the furnace differ with the grade of metal to be produced. In a period of about ten years the max. size of the ELKEM FeSi furnace has increased from 24 MVA to 75 MVA. The 75 MVA unit has been in operation since 1972.

Equipment for rotation of the furnace crucible is recommended for all Si-reduction furnaces.

The quality of the quartzite and reducing agents used is of vital importance in the production of FeSi and Si metal.

Due to environmental regulations, cleaning of the exhaust gases from open Si furnaces is almost universally required. Equipment to meet the emmission problems is supplied by the Engineering Division. A special furnace design has been developed to reduce the amount of gas to be cleaned.

| Type of furnace | Open rotating (alt. semi-closed, rotating) | | | | | | |
|---|---|---|---|---|---|---|---|
| Transformer cap. kVA | 7.500 | 15.000 | 24.000 | 33.000 | 48.000 | 60.000 | 75.000 |
| Nominal load kW | 6.500 | 13.000 | 20.000 | 25.000 | 35.000 | 40.000 | 50.000 |
| Approximate annual production in m. tons | | | | | | | |
| a) 45-50 % FeSi: | 10.000 | 20.000 | 30.000 | 40.000 | 55.000 | 60.000 | 75.000 |
| b) 75 % FeSi: | 6.000 | 11.000 | 17.000 | 21.000 | 30.000 | 35.000 | 43.000 |
| c) 90 % FeSi: | 4.500 | 9.000 | 13.000 | 17.000 | 23.000 | – | – |
| d) Si-metal : | 4.000 | 8.000 | 12.000 | 15.000 | – | – | – |

**Normal operational figures per metric ton of product:**

| Si-grade | | 45 % | 75 % | 90 % | Si-metal |
|---|---|---|---|---|---|
| Quartz | kgs | 1.100 | 1.800 – 2.000 | 2.300 – 2.500 | 2 500 – 3 000 |
| Reductants | kgs | 600 | 850 – 1.050 | 1.300 – 1.500 | 1 800 |
| Fe material | kgs | 600 – 650 | 250 – 275 | 80 – 90 | – |
| Electric power | kWh | 4 800 – 5 100 | 8.500 – 9.200 | 11.000 – 13.000 | 12.000 – 14 000 |
| Electrode paste | kgs | 25 – 40 | 50 – 70 | 70 – 100 | 100 – 150 |

EXHIBIT C

## OVERVIEW AND EXECUTIVE SUMMARY

This program was undertaken to provide the U. S. Environmental Protection Agency (EPA) with insight into (1) the extent to which the U. S. ferroalloy industry uses furnace-product flexibility, (2) the effect of ferroalloy-furnace design (specifically a comparison of open versus totally sealed furnaces) on product flexibility, and (3) research and development areas which could enhance product flexibility in sealed furnaces and/or make sealed ferroalloy furnaces more practical in the U. S. industry.

With one exception, all ferroalloy furnaces are of the "open" type in the United States. Elsewhere, particularly in Japan, many ferroalloy furnaces are of the "sealed" type. An EPA study has indicated that the sealed ferroalloy furnaces offer the potential to be operated with lower pollution of the atmosphere than the other types of furnaces. In light of this advantage, the question has been raised as to why sealed ferroalloy furnaces are not presently utilized to a greater degree in the United States. Reservations about the "flexibility" of sealed furnaces relative to open furnaces have been one of the primary deterrents cited concerning the lack of adoption of sealed furnaces in the United States.

Flexibility of a ferroalloy furnace is the term selected to describe the ability to change the furnace from the production of one type or family of ferroalloys to another family requiring different smelting conditions. Furnaces with high flexibility can be used to manufacture a wide variety of ferroalloys, usually with only short changeover periods and/or low loss of production occurring during product switches. Furnaces with low flexibility are generally designed to produce ferroalloys under conditions that are optimum for a specific type or family. Low flexibility furnaces do not readily lend themselves to product conversions, as product changes in these furnaces may incur significant penalties in technology, changeover time, and costs.

Based upon an extensive literature review and numerous interviews with representatives of ferroalloy companies, it is concluded that the U. S. ferroalloy industry has used and is likely to continue utilizing high furnace-product flexibility to remain competitive in a changing domestic and international marketplace.

In comparing the product flexibility of open and sealed furnaces, it is concluded that sealed ferroalloy furnaces are less flexible than comparable, open-hooded furnaces, because (1) it has not yet been demonstrated feasible to smelt all the common ferroalloys in sealed furnaces, and (2) a sealed-furnace operation generally requires greater charge preparation and attention to operating details than a comparable, open-hooded furnace on the same product. U. S. ferroalloy producers are reluctant to install sealed furnaces until either (1) a long-term market demand is assured for that particular sealed-furnace product and/or (2) it has been demonstrated feasible to smelt essentially all the ferroalloys, specifically the high-silicon-content ferroalloys, under sealed-furnace conditions.

Battelle investigators recommend that EPA (1) conduct a cross-media assessment of the overall (i.e., air, water, solid waste, etc.) environmental characteristics of open-hooded and sealed ferroalloy furnaces to define future policy statements, and (2) assist in evaluating the design and performance of baghouses used with ferroalloy furnaces with the objective of securing methods for lowering the annual total emissions from existing and future ferroalloy furnaces.

The investigators also formulated two suggestions for additional programs aimed at increased utilization of sealed ferroalloy furnaces and/or lower furnace emissions from U. S. operations. These suggested programs involve (1) determination of whether the substitution of iron-ore pellets (as used in Japan) for ferrous scrap (as used in the U. S.) decreases the need for stoking and improves the ease of operation in the smelting of 50 and 75 percent ferrosilicon alloys, and (2) research directed at insuring that sealed furnaces are safe operations through the development of improved furnace-monitoring techniques and devices.

A Study of Ferroalloy Furnace Product Flexibility
Ref. No. EPA-650/2-75-063, July 1975

THE FERROALLOYS ASSOCIATION
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Washington, D.C. 20006

(202) 659-4131

George A. Watson, President

May 27, 1983

Almost two years ago - August, 1981 - the ferroalloy industry which produces important and critical materials containing chromium, manganese and silicon for use in steel and aluminum production asked the government to determine whether imports of ferroalloys at over 60 percent of consumption posed a threat to the national security. These strategic and critical materials have long been recognized as essential to our military and industrial strength but the capacity to produce them domestically is dwindling rapidly in favor of lower priced materials from many foreign countries, particularly those in South Africa.

Increasing reliance on off-shore countries to supply these materials will inevitably decrease our supply options thus increasing our vulnerability to supply interruptions and cut-offs during emergency periods as well as exposing our economy to the possibility of exorbitant and unreasonable prices in periods of high demand. We cannot fault resource-rich countries such as the Republic of South Africa, Zimbabwe, Gabon and Brazil from wanting to maximize the value of their extensive chromium and manganese reserves by exporting ferroalloys rather than ore but we must be concerned when those exports totally destroy domestic production and imperil ore production in and supply from many countries not engaged in ferroalloy production.

But countries rich in chromium and manganese such as the Republic of South Africa and Gabon do ship huge quantities of their ores to Europe and Japan but not to the United States. The EEC countries of Europe and Japan have taken positive measures to preserve significant ferroalloy capacity in recognition of its importance to their economies and national security. Mr. Eishiro Saito, chairman of both Nippon Steel Corp. and the Japan Iron and Steel Federation has stated "I would like to emphasize that in view of the importance of the ferroalloy industry to the national economy as a whole and the need to maintain and develop national security and technology, every nation must keep its ferroalloy industry viable at an appropriate scale." In contrast, the U.S. ferroalloy industry is on the brink of oblivion as imports continue to flood the market at prices below costs.

On December 3, 1982, the attached news release from Commerce acknowledged a national security problem and announced a program to upgrade the national stockpile by converting limited amounts of stockpiled ore to two ferroalloys, a program that, it was hoped, would also help maintain domestic ferroalloy capacity. On May 9, 1983 the attached news release from GSA announced some aspects of the proposed stockpile upgrading program. Also, on March 30, 1983 the Office of U.S. Trade Representative ordered the minor step of removing high carbon ferromanganese from GSP and restore the 1.5% duty upon imports from less-developed countries.

In the meantime, the ferroalloy industry continues to suffer from imports that in 1982 captured about 65 percent of reported consumption and are showing no signs of diminishing in 1983. In fact, any resurgence of demand for ferroalloys as the economy improves will result in an even greater flood of low-priced imports from a world hungry for U.S. dollars at any price. In the last two years the high value of the dollar has been the major reason imports have been priced well below American costs. The attached report on the industry's financial performance and operating rate gives mute testimony to the dire straits to which imports have driven it.

The stockpile upgrading program fails to address the problem of imports and, at best, will only prolong the death throes of the domestic producers. As presently conceived the program can be produced by two of the 21 furnaces usually used to produce those products. Currently, the one furnace now producing high carbon ferrochrome will be shut down at the end of May and, for the first time since the early days of the product's introduction around 1900 there will be no production of high carbon ferrochrome in the United States. Similarly, there was no production of high carbon manganese in February and only one furnace is today producing that product -- the industry's largest tonnage product, which is absolutely essential for the production of steel.

The stockpile upgrading program will, to a limited degree, improve the stockpile readiness for use in an emergency but falls far short of meeting the nation's security needs. For one thing, it does not provide the balanced inventory of chromium and manganese ferroalloys and metals that will be needed for modern technology in steel production. Of even greater importance is the fact that the national security cannot depend on the stockpile alone but requires domestic ferroalloy furnace and processing capacity sufficient to make up shortfalls in supply from the stockpile and the probable cut off of most imports. Supplies of domestic ores, ores from the stockpile or ores from other countries will be of no use to the United States if it allows its domestic ferroalloy capacity to die.

Currently, the domestic ferroalloy industry has the capacity to supply only about one-half of the nation's probable demand in an emergency, and much of that capacity is now shut down and staggering on the brink of oblivion. To rebuild capacity takes at least two years for construction and another year or more for training operators to run the furnaces. Clearly the national security demands the retention of most, if not all of the current furnace capacity. The only other option would be a multi-billion dollar build-up of the stockpile to include a full range of chromium, manganese and silicon ferroalloys and metals to supply all of the nation's emergency needs.

Domestic capacity to produce ferroalloys will not be preserved by the stockpile program and must be supported by some form of intervention in the market place to curb the unreasonably low pricing of imports. Increased tariffs, import quotas or orderly marketing agreements are available tools but the domestic industry's suggested break-point price system offers a means of accomplishing the desired goals with a minimum of interference in international trade and with little or no objections from our trading partners. In fact, some exporting countries will welcome break-point pricing. Furthermore, the EEC has established minimum import prices for certain ferroalloys and Japan, in its own inimitable way, has restricted imports of selected ferroalloys to preserve their domestic capacity.

The break-point price system, based on costs of efficient domestic producers, would establish a CIF duty declared value for each imported article and impose a severe tariff penalty on any imports below that value. This type of remedy would not restrict the volume of imports but would assure fair pricing in the U.S. market and probably in the world market as well, as happened with high carbon ferrochrome in the late 1970's when break-point pricing was ordered on imports of that product.

Break-point pricing applied to imports of all chromium, manganese and silicon ferroalloys would preserve the capacity of the industry and allow it to continue to modernize its facilities which are, and have been for the most part, as modern and efficient as any in the world. Break-point pricing properly constructed and applied would force certain marginal domestic producers to modernize or close down and ultimately result in a domestic industry that will be able to compete in free and fair international trade and stand ready to respond to the nation's needs in an emergency.

The Department of Commerce has the authority to submit recommendations to the President for relief from ferroalloy imports that are destroying domestic production and capacity. But whatever Commerce recommends, the ultimate responsibility for protecting the nation's security resides in the National Security Council. Commerce should recommend promptly the application of break-point pricing to ferroalloys (as it had proposed in one of its draft reports in early 1982). But regardless of what Commerce recommends, NSC should act promptly and decisively to redress the threat which ferroalloy imports pose to our national security by urging the President to implement break-point pricing on ferroalloys.

UNITED STATES DEPARTMENT OF
COMMERCE
NEWS
WASHINGTON, D.C. 20230

INTERNATIONAL
TRADE
ADMINISTRATION

CONTACT: Daniel Landa, (202) 377-2253

ITA 82-164

FOR IMMEDIATE RELEASE

PRESIDENT MOVES TO IMPROVE FERROALLOY SUPPLIES IN DEFENSE STOCKPILE

The President has moved to upgrade stockpiled manganese and chromium ores to improve stockpile readiness. This will help maintain domestic ferroalloy furnace and processing capacity.

The President's actions follow concerns raised by the Commerce Department's report to the President on a ferroalloys investigation conducted under the authority of section 232 of the Trade Expansion Act of 1962. The report followed a petition filed with the Commerce Department by the Ferroalloy Association in August 1981, requesting an investigation, under the statute, of the impact on national security of ferroalloy imports.

The upgrading program is designed to meet two objectives. It will decrease the amount of stockpile ore requiring conversion to ferroalloy form in time of national emergency, while helping to maintain domestic ferroalloy furnace and processing capacity.

Under the authority of the Strategic and Critical Materials Stockpiling Revision Act of 1979, General Services Administration (GSA) will begin a program planned to produce approximately 577,000 short tons of high-carbon ferromanganese and 519,000 short tons of high-carbon ferrochromium during the next ten years. The action will provide upgraded products in the national stockpile for immediate use in case of national emergency.

A high-level inter-agency group will review and report to the President on whether to withdraw or limit duty-free treatment allowed high-carbon ferromanganese under the Generalized System of Preferences (GSP).

After the GSP review and a review by the Commerce Department of the initial results of the stockpile upgrading program, the President will further assess whether ferroalloy imports threaten to impair the national security.

12/3/82

#

GSA News Release

GSA #8433

May 9, 1983

## GSA to Upgrade Manganese and Chromite Ores in U.S. Stockpile

The U.S. General Services Administration (GSA) today announced a 10-year plan to upgrade into more readily usable ferroalloys significant quantities of National Defense Stockpile manganese and chromite ores.

The presidentially directed project calls for processing about 1,154,000 short tons of manganese ore into 576,822 short tons of high-carbon ferromanganese and some 1,297,000 short tons of chromite ore into 518,500 short tons of high-carbon ferrochromium.

The cost of upgrading is estimated at $40,000,000 a year, excluding transportation. For the first three years upgrading will be financed by the exchange of excess stockpile materials.

GSA plans to award contracts for upgrading the ores by competitive negotiation among firms whose primary business is processing of ferromanganese and ferrochrome. Prospective processors must demonstrate current capability for the task and a three-year history of successful performance.

Successful bidders will be required to pick up ore from selected storage sites, transport and process the ore, and deliver the high-carbon ferroalloys to designated GSA storage depots.

The request for proposal will be issued by GSA in late June.

# # #

**THE FERROALLOYS ASSOCIATION**
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(202) 659-4131

George A. Watson, President

## FERROALLOY ASSOCIATION INDUSTRY FINANCIAL PERFORMANCE

| | Domestic Sales (Mill.$) | Operating Rate % KWhr/Cap. | Profit (Loss) Before Taxes (Mill.$) |
|---|---|---|---|
| 1976 | 693 | 77 | 69 |
| 1977 | 663 | 77 | 11 |
| 1978 | 718 | 73 | (40) |
| 1979 | 862 | 84 | 32 |
| 1980 | 791 | 68 | (9) |
| 1981 | 823 | 64 | 12 |
| 1982 | | | |
| 1st Qtr. | 175 | 43 | (25) |
| 2nd Qtr. | 152 | 43 | (19) |
| 3rd Qtr. | 128 | 28 | (29) |
| 4th Qtr. | 111 | 21 | (32) |
| TOTAL | 566 | 35 | (105) |
| 1983 | | | |
| 1st Qtr. | 141 | 29 | (28) |

Includes 15 member companies of the Ferroalloys Association producing chromium, manganese and silicon ferroalloys and metals.

The CHAIRMAN. Thank you very much.

Mr. Collins.

## STATEMENT OF JOHN F. COLLINS, PRESIDENT, SKW ALLOYS, INC.

Mr. COLLINS. Thank you, Mr. Chairman. I am John F. Collins, president of SKW Alloys of Niagara Falls, N.Y., with plants located in Niagara Falls, N.Y., and Calvert City, Ky., making ferroalloys of manganese, chrome, and silicon.

The most serious problem SKW Alloys faces in the marketplace is the insatiable appetite the foreign ferroalloy producers have for the U.S. market. This love affair with the U.S. market began more than 15 years ago and has shown no sign of being satisfied with less than 100 percent of the total market. They have already achieved 100 percent of the charge chromium market, the element that makes stainless steel stainless, and imports have achieved 95 percent of the high carbon ferromanganese market—a ferroalloy absolutely essential in controlling sulfur inclusions in steel. Without manganese, steel could not be rolled.

Foreign producers of manganese and chromium ferroalloys argue that since they are located near or on ore bodies they are lower cost and more reliable suppliers of chromium and manganese ferroalloys than domestic producers. Then, too, they argue since the ores would have to be imported into the United States for conversion to ferrochromium and ferromanganese alloys, why not bring in the finished alloys?

I think there are many reasons why bringing in ore represents greater stability than bringing in ferroalloys. For example, it is relatively easy to sabotage a powerplant, damage a ferroalloy plant, but is more difficult to make a hole in the ground mining operation inoperative. In recent years the imports of ferrosilicon into the United States markets have increased markedly. The quality quartz and reducing agents to make all grades of silicon alloys are present in the United States in copious quantities. As a matter of fact, quartz and reducing agents have been shipped from the United States to Norway for the production of silicon metal.

On ferrosilicon products, the advantages of raw material availability and quality are not stressed by the importers as is the case with chromium and manganese alloys. Just the low price is stressed.

What is so attractive about the U.S. market for importers of ferroalloys? One, it is a large market which is completely free of seller restrictions. All who sell in the United States markets are welcomed with open arms and are treated equal under U.S. law. A Rhodesian friend of mine, now a Zimbabwean friend, was very complimentary on the freedom of trade in the United States and the lack of restrictions against imported material. This was and is a great compliment to the free enterprise system but extremely costly to the domestic producers when trade is not conducted under like conditions on a global basis.

Two, at the present time, the Common Market has floor prices on imports of standard ferromanganese, 75 percent ferrosilicon and silicomanganese. This means that imports in Europe must be sold at minimum prices, prices designed to permit the domestic European ferroalloy producers to operate at a profit.

Three, Japan through MITI and with the cooperation of its steel industry has restrictions on the import of manganese products, thus making the United States the only true free market for ferroalloys.

One frequently hears that import materials are lower cost than domestic produced ferroalloys. It is true that foreign ferroalloys sell at a lower price than domestic materials but are not necessarily lower cost nor made in more efficient furnaces. Several months ago I was in Brazil visiting a ferroallows plant whose manager was proudly showing off a new 20-megawatt furnace producing 75-percent ferrosilicon destined for the U.S. market. At that very moment we at SKW alloys had a 40-megawatt furnace at Calvert City shut down because of lack of demand and foreign material being sold in the United States at below the break-even prices for the same product made in twice as large and more efficient a U.S. furnace.

We must refocus our Federal policies and recommend legislation that will lead to a revitalization of our basic mining and mineral processing industries. Failure to do so will make these basic industries incapable of providing for national security in time of international crisis.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Collins follows:]

# STATEMENT

of

JOHN F. COLLINS, PRESIDENT
SKW ALLOYS, INC.

Before The

Committee on Energy and Natural Resources

U. S.Senate

EXHIBIT A

June 20, 1983
Washington, D.C.

Thank you, Mr. Chairman. I am John F. Collins, President of SKW Alloys, Inc., Niagara Falls, New York, with plants located in Niagara Falls, New York and Calvert City, Kentucky, producing ferroalloys of Chromium, Manganese and Silicon.

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In recent years, the imports of Ferrosilicon to the United States have increased markedly. The quality quartz and reducing agents to make all grades of Silicon

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alloys are present in the United States in copious quantities. As a matter of fact, quartz and reducing agents have been shipped from the United States to Norway for the production of Silicon Metal. On Ferrosilicon products, the advantages of raw material availability and quality are not stressed by the importers, as is the case with Chromium and Manganese ores; just the low price is stressed.

What is so attractive about the U. S. market for imported ferroalloys?:

1. It is a large market which is completely free of seller restrictions. All who sell in the U. S. are welcomed with open arms and are treated equal under U. S. law. A Rhodesian friend of mine, now a Zimbabwe friend, was very complimentary of the freedom of trade in the U. S. and on the lack of restrictions against imported materials. This was and is a great compliment to the free enterprise system, but extremely costly to the domestic producers when trade is not conducted under like conditions on a global basis.
2. At the present time, the EEC has floor prices on imports for Standard Ferromanganese, 75% Ferrosilicon and Silicomanganese. This means imports must be sold at minimum prices, prices designed to permit the domestic European ferroalloy producers to operate at a profit.

..../3

3. Japan, through MITI and with the cooperation of its steel industry, has restrictions on the imports of Manganese products, thus making the United States the only true free market for many ferroalloys.

One frequently hears that imported materials are lower cost than domestic produced ferroalloys. It is true that foreign ferroalloys sell at a lower price than domestic materials, but are not necessarily lower cost nor made in more efficient furnaces. Several months ago, I was in Brazil visiting a ferroalloys plant, whose manager was proudly showing off a new 20 megawatt furnace producing 75% Ferrosilicon destined for the U. S. market. At that very moment, we at SKW Alloys had a 40 megawatt furnace at Calvert City shut down because of lack of demand and foreign material being sold in the U. S. at below the break-even prices for the same product made in a twice as large and more efficient U. S. furnace.

We must refocus our Federal Policies and recommend legislation that will lead to a revitalization of our basic mining and mineral processing industries. Failure to do so will make these basic industries incapable of providing for national security in time of internal crisis.

######

JFC 6/20/83

The CHAIRMAN. Thank you very much.

Mr. Trunzo.

## STATEMENT OF JOHN P. TRUNZO, PRESIDENT, ELKEM METALS CO.

Mr. TRUNZO. I am John Trunzo, president of Elkem Metals Co. Elkem Metals is a major producer of ferroalloys which are vital ingredients used in steel, cast iron, aluminum, and chemical ferroalloys. Our headquarters are in Pittsburgh. Our plants are located in Ashtabula, Ohio, Marietta, Ohio, and Alloy, W. Va. We also have an Alloy Technology Center located in Niagara Falls, N.Y. We are a major producer of alloys of chrome, manganese, and silicon.

I appreciate the opportunity to talk to the committee today about one of the strategic ferroalloys that our company makes. That ferroalloy is ferromanganese. The reason that this product is so strategic is that ferromanganese is essential in producing steel. The manganese in ferromanganese neutralizes harmful sulfides in steel and allows this versatile material to be hot folled into the myriad of steel shapes used in our economy and national defense.

In fact, you cannot make a usable steel without manganese. That means that we must have manganese if we are going to have steel for weapons, tanks, ships, missiles, and other hardware used by our Armed Forces. The manganese is just as essential in steel used in applications that support our national defense. Our railroads, our highways could not exist without steel. We cannot extract oil or minerals from the ground without steel. We cannot machine or stamp parts needed for national defense without steel. In short, steel and the manganese that goes into it are essential materials for our national defense.

You will notice that I have talked about manganese and ferromanganese. Manganese is the metallic element needed by steel to make it the useful material that we know today. It is found in ores in limited parts of the world mainly South Africa, Australia, Brazil and Gabon, and Mexico.

Unfortunately, it is not found in usable and economical quantities in the United States, but manganese ore cannot be added directly to make steel. It must first be made into a ferroalloy called ferromanganese which then can be added to steel. The United States has traditionally imported the ore from friendly countries and smelted the ore to ferromanganese in furnaces in this country. This process even worked successfully during World War II and in the Korean conflict when the steel industry needed unprecedented amounts of manganese to support our war effort.

However, during the past decade this strategic relationship has undergone a major shift. As you can see in the first chart here, the United States has gone from a country that produces its own ferromanganese to one that imports this vital ingredient, which accounts for about 70 percent of all manganese consumed in steel production. In 1974, for example, this country produced 70 percent of the ferromanganese it needed. This year the United States will produce only 7 percent of the ferromanganese it will use. In effect, the United States is virtually out of the ferromanganese business.

Our company is the only standard ferromanganese producer left in the United States, and we are hanging on by our toes. Many in Government and industry do not seem to be worried by this trend. They fell that we can produce the ferromanganese we need from stockpiled ore should we need it. They also feel that the economics of the industry call for ferromanganese to be made in countries that have the ore.

I strongly disagree with both of these points. We do have some manganese ore stockpiled in this country currently. There are 3.4 million tons of ore stored at various sites around the country. This ore can be converted to 1.7 million tons of standard ferromanganese. This ferromanganese can support the United States steel industry for about 3 years at current depressed rates which is far less than what would be needed in a national emergency.

We also have a modest ore conversion program waiting to be implemented by the administration. Under this plan, 34 percent of the stockpiled ore will be converted to ferromanganese over 10 years, but what will happen if suddenly a vast amount of ferromanganese is quickly needed for national emergency? We have two options. We can import the ore from friendly, stable countries like Australia, Mexico, and convert the ore to ferromanganese in U.S. furnaces, or we can continue to import ferromanganese from countries like South Africa that are currently meeting most of our need.

I believe that the first option is much more reliable than the second. South Africa which currently supplies 51 percent of the ferromanganese used in the United States is a country that could face severe political problems as the majority black population seeks a political voice. If this happens, we could be cut off from our major supplier, and the stable manganese ore countries like Australia and Mexico do not have anywhere near enough smelting capacity to take up the slack.

The problem with the first option is that we are rapidly losing the ability to convert ore to ferromanganese ourselves. As the ferromanganese industry has contracted, furnaces have been dismantled. Some have suggested that we could use silicon furnaces in the U.S. to produce ferromanganese. However, this route will curtail the silicon we need for steel, cast iron, and aluminum, besides additional cost and time benefits.

The best approach I believe is to maintain a viable U.S. ferromanganese industry that can convert ore from friendly countries in a national emergency. Japan and the European Economic Community apparently agree with this philosophy as both produce most of their own ferromanganese from imported oil.

Economically the U.S. ferromanganese industry is generally competitive with overseas producers even with countries having their own ore if both competed on an equal basis, which brings me to the other fallacy that I would like to talk about today—the belief that countries that have manganese ore have a natural economic advantage. I would, therefore, like to compare our facilities and costs with those of South Africa which supplies 51 percent of the ferromanganese used in the United States. In fact, since Japan and the European Economic Community insist on producing their own ferromanganese, South Africa exports 80 percent of its production to the United States, and with the help of its government, it has developed an industry geared to supplying the U.S. market.

The next chart compares the ore sources, facilities, and production costs of Elkem Metals Co. ferromanganese facilities in Marietto, Ohio, with those of South African ferromanganese producers. Several points of comparison emerge.

Ore—the cost to both should be substantially the same, assuming the South Africans treat the mine as a profit center like U.S. ore producers do. Since Elkem Metals is not tied to one ore source, we are able to buy an optimum ore blend of the best metallurgical process. We find that South Africa, on the other hand, is rapidly depleting high-grade reserves and must purchase high-grade ores from elsewhere in order to maintain an optimum practice.

Two, the equipment and technology, both countries are leaders in this area.

Three, power—both countries have a comparable power base of about 20 to 25 mills. Should South African wage rates rise sharply, South Africa's power faces a faster cost increase than Marietta's low-cost captive power.

Four, furnace labor—this is the only area where South Africa enjoys a clear economic benefit. Although the labor is a relatively minor part of the total ferromanganese cost, South African labor is paid only about 25 percent as much as the U.S. labor counterpart. However, this gap may narrow as South African blacks demand a greater share of the economic pie.

Our total costs so far indicate a slight advantage for South Africa. However, there is other costs that even things up, and that is transportation costs. Ironically, the cost of transportation has been widely misunderstood as nations with their own ore sources have been promoting the idea that they have lower transportation costs. In reality, this is often not so. Our next chart shows why South Africa faces high transportation costs.

As you can see, South Africa ore must be shipped at least 600 miles by rail from the mines to the smelter. Then the smelted ferromanganese must be shipped anywhere from 275 miles to 875 miles by rail to an ocean-going port for shipment to the United States At the very least, that is like shipping a product from Baltimore to Kansas City by rail. Then when the ferromanganese is loaded on a boat to begin its long 8,000-mile journey to the United States, the South African ferromanganese incurs freight and handling charges that are much higher than those for the ore. A breakout of these charges is included in my copy of the speech which you have, so let me summarize transportation costs.

The cost of shipping South African ore to a South African smelter to make one ton of standard ferromanganese and then shipping that ton of ferromanganese to East Liverpool, Ohio warehouse, is $98.96. The cost of shipping South African ore to our smelter in Marietta, Ohio, to make one ton of standard ferromanganese and then shipping that ton to East Liverpool, Ohio, is only $90.82. That means we have an economic advantage of $8.14 per ton of ferromanganese in shipping costs. That also means that the overall costs of producing ferromanganese in the United States and South Africa are quite similar so why you ask does South Africa produce

51 percent of the ferromanganese used in the U.S. market while the United States produces only 7 percent?

A lot has been made lately about the difference in currency exchange rates which have had an important impact in the last couple of years, but the basic reason is the Government and industry work together very closely to encourage exports to the United States even though those exports are often sold at a loss. In fact, Samancor, a leading South Africa leading producer, is even owned by the Government.

Other countries are also working closely with their ferromanganese producers to encourage exports to the United States France has extremely transportation costs because they ship ore from Gabon to France and then ferromanganese must be shipped across the Atlantic. At the same time, the ferromanganese is produced in an obsolete process by U.S. standards, so much so that the plant has gone bankrupt twice and had to be restructured twice by the French Government. Still France has captured 21 percent of the U.S. ferromanganese market.

Obviously the high value of the U.S. dollar versus the French franc has aggravated the problem, but the main reason is the French ferromanganese is selling in the United States at a loss.

I can cite similar statistics about Brazil and others, but my basic thesis is that the U.S. ferromanganese industry is fully competitive with other countries but is losing out because it does not enjoy the economic benefits given others by their governments. I believe this is a strategic mistake.

Japan and the European Economic Community protect their ferromanganese industries in the face of this competition. I think the U.S. should do so, too. The U.S. ferroalloy industry is not asking for protectionism, but unless the industry gets equity in trading with other countries, it needs support against unfair trade if it is going to survive. That is why we strongly support the break point price recommended by the Ferroalloys Association and mentioned in Mr. Watson's testimony. Such a price reflecting the actual production costs plus normal profit would allow U.S. manganese and other ferroalloy producers to compete on an equal basis. As you can see from my presentation, we can compete under such conditions. By maintaining a position in the marketplace we can maintain the viable manganese industry that we will need in a national emergency.

I would like to summarize a couple of key points for you to remember as you consider the strategic importance of manganese.

One, the steel industry will need large amounts of ferromanganese, not manganese ore, in a national emergency. Without this ferromanganese, no usable steel can be produced.

We can rely on stable, friendly countries like Australia and Mexico to provide us with manganese ore in a national emergency. However, our major source of ferromanganese—South Africa—has a potential for severe political unrest.

Three, the U.S. ferromanganese industry can compete with other ferromanganese producers in the world on a fair trade basis. Ore-producing countries do not have an inherent economic benefit as widely believed.

I believe that the U.S. ferromanganese industry should be given a chance to compete with other ferromanganese producers on an equal basis. I believe this can best be done by establishing a breakpoint price on ferromanganese products. In this way we can maintain the viable ferromanganese industry in the United States that we will need in a national emergency.

Mr. Chairman, I want to thank you and other members of the committee and the staff for allowing me to appear here today. I will be glad to answer questions.

[The prepared statement of Mr. Trunzo follows:]

# "THE MANGANESE CRISIS AFFECTING OUR NATIONAL SECURITY"

by

JOHN P. TRUNZO

President, Elkem Metals Company

before

Committee on Energy and Natural Resources

U.S. Senate

June 20, 1983

Mr. Chairman, I am John P. Trunzo, President of Elkem Metals Company. Elkem Metals is a major U.S. producer of ferroalloys, which are vital ingredients used in steel, cast iron, aluminum, and chemicals. Our headquarters are in Pittsburgh, while our plants are located in Ashtabula, Ohio; Marietta, Ohio; and Alloy, W. Va. We also have an Alloy Technology Center in Niagara Falls, N.Y. Our total employment is currently about 1,800, although we have the capacity to employ substantially more.

I appreciate the opportunity to talk to the committee today about one of the strategic ferroalloys that our company makes. That ferroalloy is ferromanganese. The reason that this product is so strategic is that ferromanganese is essential in producing steel. The manganese in ferromanganese neutralizes harmful sulfides in steel and allows this versatile material to be hot-rolled into the myriad of steel shapes used in our economy and national defense.

In fact, you cannot make a usable steel without manganese. That means that we must have manganese if we are going to have steel for weapons, tanks, ships, missles, and other hardware used by our armed forces. But manganese is just as essential in steel used in applications that support our national defense. Our railroads and highways could not exist without steel. We cannot extract oil or minerals from the ground without steel. We cannot machine or stamp parts needed for national defense without steel. In short, steel -- and the manganese that goes into it -- are essential materials for our national security.

## Decline in U.S. Ferromanganese Production

You will notice that I have talked about manganese and ferromanganese. Manganese is the metallic element needed by steel to make it the useful material that we know today. It is found in ores in limited parts of the world - mainly South Africa, Australia, Mexico, Brazil, and Gabon. Unfortunately, it is not found in usable economical quantities in the United States.

But manganese ore cannot be added directly to the steel making furnace. It must first be made into a ferroalloy called ferromanganese, which can then be added to steel. The United States has traditionally imported the ore from friendly countries and smelted the ore to ferromanganese in furnaces in this country. This process even worked successfully during World War II and the Korean conflict, when the steel industry needed unprecedented amounts of manganese to support our war effort.

However, during the past decade, this strategic relationship has undergone a major shift. As you can see in the first chart (Figure 1), the United States has gone from a country that produces its own ferromanganese to one that imports this vital ingredient. (The chart shows production for standard ferromanganese, which accounts for about 70% of all manganese consumed in steel production.) In 1974, for example, this country produced 70% of the ferromanganese it needed. This year, the U.S. will produce only 7% of the ferromanganese it will use. In effect, the U.S. is virtually out of the ferromanganese business. Our company is the only standard-ferromanganese producer left in the United States and we are hanging on by our toes.

Many in government and industry do not seem to be worried by this trend. They feel that we can produce the ferromanganese we need from stockpiled ore should we need it. They also feel that the economics of the industry call for ferromanganese to be made in countries that have the ore. I strongly disagree with both of these points.

## Fallacy of Relying on Stockpile

We do have some manganese ore stockpiled in this country. Currently, there are 3.4 million tons of ore stored at various sites around the country. This ore can be converted to 1.7 million tons of standard ferromanganese. This ferromanganese can support the U.S. steel industry for about 3 years at current depressed rates, which are far less than what would be needed in a national emergency.

We also have a modest ore-conversion program waiting to be implemented by the Administration. Under this plan, 34% of the stockpiled ore will be converted to ferromanganese over 10 years. But what will happen if we suddenly need vast amounts of ferromanganese quickly in a national emergency? We have two options:

o We can import the ore from friendly, stable countries like Australia and Mexico and convert the ore to ferromanganese in U.S. furnaces.

o Or we can continue to import ferromanganese from countries like South Africa that are currently meeting most of our needs.

I believe that the first option is much more reliable than the second. South Africa, which currently supplies 51% of the ferromanganese used in the United States, is a country that could face severe political problems as its majority black population seeks a political voice. If this happens, we could be cut off from our major supplier. And stable manganese-ore countries like Australia and Mexico do not have anywhere near enough smelting capacity to take up the slack.

The problem with the first option is that we are rapidly losing the ability to convert ore to ferromanganese ourselves. As the ferromanganese industry has contracted, furnaces have been dismantled. Some have suggested that we could use silicon furnaces in the U.S. to produce ferromanganese; however, this route will curtail the silicon we will be needing for steel, cast iron, and aluminum.

The best approach, I believe, is to maintain a viable U.S. ferromanganese industry that can convert ore from friendly countries in a national emergency. Japan and the European Economic Community apparently agree with this philosophy as both produce most of their own ferromanganese from imported ores. Economically, the U.S. ferromanganese industry is generally competitive with overseas producers, even with countries having their own ore, if both competed on an equal basis.

## Fallacy of Economic Advantage of Ore-Producing Countries

Which brings me to the other fallacy that I would like to talk about today -- the belief that countries having manganese ore have a natural economic advantage. I would therefore like to compare our facilities and costs with those of South Africa, which supplies 51% of the ferromanganese used in the United States. In fact, since Japan and the EEC insist on producing their own ferromanganese. South Africa exports 80% of its production to the United States. And with the help of its government, it has developed an industry geared to supplying the U.S. market.

My next chart (Figure 2) compares the ore sources, facilities, and production costs of Elkem Metals' ferromanganese facilities at Marietta, Ohio with those of South African ferromanganese producers. Several points of comparison emerge:

1. Ore. The cost to both should be substantially the same, assuming that the South Africans treat the mine as a profit center like U.S. ore producers do. Since Elkem Metals is not tied to one ore source, we are able to buy an optimum blend of the best ores in the world. South Africa, on the other hand, is rapidly depleting its high-grade reserves and must purchase high-grade ores from elsewhere in order to obtain an optimum practice.

2. Equipment and Technology. Both countries are leaders in these two areas.

3. Power. Both countries have comparable power rates of about 20 to 25 mils. Should South African wage rates rise sharply, South Africa's coal-based power faces a faster cost increase than Marietta's low-cost captive power.

4. Furnace Labor. This is the only area where South Africa enjoys a clear economic benefit. Although labor is a relatively minor part of total ferromanganese-production costs, South African labor is paid only 25% as much as its U.S. counterpart. However, this gap may narrow as South African blacks demand a greater share of the economic pie. By the same token, this is also a potential source of severe unrest that could make South Africa a very unreliable source of

ferromanganese.

## Comparison of Transportation Costs

Our total costs so far indicate a slight advantage for South Africa. However, there is one other cost that evens things up -- and that is transportation costs. Ironically, the cost of transportation has been widely misunderstood as nations with their own ore sources have been promoting the idea that they have lower transportation costs. In reality, this is often not so.

A look at the next chart (Figure 3) shows why South Africa faces high transportation costs. As you can see, South African ore must be shipped at least 600 miles by rail from the mine to the smelter. Then the smelted ferromanganese must be shipped anywhere from 275 to 875 miles by rail to an ocean-going port for shipment to the U.S. At the very least, that's like shipping a product from Baltimore to Kansas City by rail.

Then when the ferromanganese is loaded on a boat to begin its long 8,000-mile journey to the United States, the South African ferromanganese incurs freight and handling charges that are much higher than those for ore. A breakout (Figure 4) of these charges is included in my copy of the speech which you have. So let me summarize transportation costs (Figure 5) as follows:

o The cost of shipping South African ore to a South African smelter to make one ton of standard ferromanganese and then shipping that ton of ferromanganese to an East Liverpool, Ohio Warehouse (including duty) is $98.96.

o The cost of shipping South African ore to our smelter in Marietta to make one ton of standard ferromanganese and then shipping that ton to an East Liverpool, Ohio Warehouse is only $90.82.

That means we have an economic advantage of $8.14 per ton of ferromanganese in shipping costs. It also means that overall costs of producing ferromanganese in the U.S. and South Africa are quite similar. So why, you may ask, does South Africa produce 51% of the ferromanganese used in the U.S. market while the U.S. produces only 7%. A lot has been made lately about the difference in currency-exchange rates, which have had an important effect in the last couple of years. But the basic reason is that government and industry work together very closely to encourage exports to the U.S., even though those exports are often sold at a loss. In fact, Samancor -- a leading South Africa manganese producer -- is even owned by the government.

Government Support for Other Ferromanganese Producers

Other countries are also working closely with their ferromanganese producers to encourage exports to the U.S. France has extremely high transportation costs because they must ship ore from Gabon to France and then the ferromanganese must be shipped across the Atlantic Ocean. At the same time, the ferromanganese is produced in an obsolete process by U.S. standards -- so much so that the plant has gone bankrupt twice and had to be restructured twice by the French Government. Still, France has captured 21% of the U.S. ferromanganese market. Obviously, the high value of the U.S. dollar vs. the French franc has aggrevated the problem. But the main reason is that French ferromanganese is selling in the U.S. at a loss.

I can cite similar statistics about Brazil and others. But my basic thesis is that the U.S. ferromanganese industry is fully competitive with other countries but is losing out because it does not enjoy the economic benefits given others by their governments. I believe this is a strategic mistake. Japan and the EEC protect their ferromanganese industries in the face of this competition. I think the U.S. should too.

The U.S. ferroalloy industry is not asking for protectionism. But unless the industry gets equity in trading with other countries, it needs support against unfair trade if it is going to survive. That is why we strongly support the breakpoint price recommended by the Ferroalloys Association and mentioned in Mr. Watson's testimony. Such a price -- reflecting the actual production cost plus normal profit -- would allow U.S. manganese and other ferroalloy producers to compete on an equal basis. As you can see from my presentation, we can compete under such conditions. And by maintaining a position in the marketplace, we can maintain the viable manganese industry that we will need in a national emergency.

## Summary

I would like to summarize a couple of key points for you to remember as you consider the strategic importance of manganese:

1. The steel industry will need large amounts of ferromanganese -- not manganese ore -- in a national emergency. Without this ferromanganese, no usable steel can be produced.

2. We can rely on stable, friendly countries like Australia and Mexico to provide us with manganese ore in a national emergency. However, our major source of ferromanganese -- South Africa -- has the potential for severe political unrest.

3. The U.S. ferromanganese industry can compete with other ferromanganese producers in the world on a fair-trade basis. Ore-

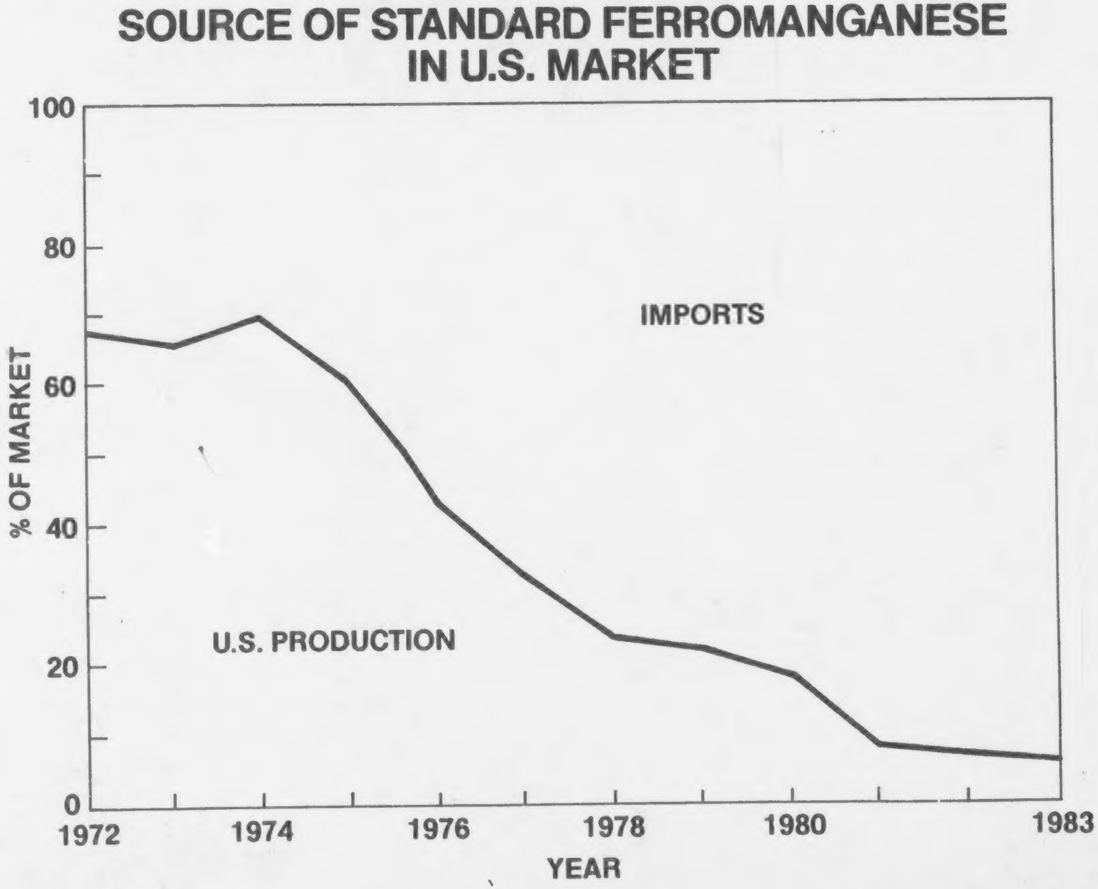
producing countries do not have an inherent economic benefit, as widely believed.

I believe that the U.S. ferromanganese industry should be given the chance to compete with other ferromanganese producers on an equal basis. I believe that this can best be done by establishing a breakpoint price on ferromanganese products. In this way, we can maintain the viable ferromanganese industry in the United States that we will need in a national emergency.

Mr. Chairman, I want to thank you and the other members of the committe and the staff for allowing me to appear today to discuss a very strategic material of interest to the United States. If you have any questions, I will be pleased to answer them in the question period.

Contact:

John Crane, Communications Manager
Elkem Metals Company
11 West 42nd Street - 23rd floor
New York, New York 10036
Tel.: 212-790-2270


SOURCE OF STANDARD FERROMANGANESE
IN U.S. MARKET
% OF MARKET
100
80
60
40
20
0
IMPORTS
U.S. PRODUCTION
1972
1974
1976
1978
1980
1983
YEAR

## COMPARISON OF FERROMANGANESE PRODUCTION COSTS

## U.S. VERSUS SOUTH AFRICA

| | |
|---|---|
| 1. ORE COST | COMPARABLE |
| 2. EQUIPMENT AND TECHNOLOGY | COMPARABLE |
| 3. POWER COST | COMPARABLE |
| 4. FURNACE LABOR | LOWER IN SOUTH AFRICA |
| 5. TRANSPORTATION COSTS | LOWER FOR U.S. PRODUCERS |

## TRANSPORTATION WITHIN SOUTH AFRICA

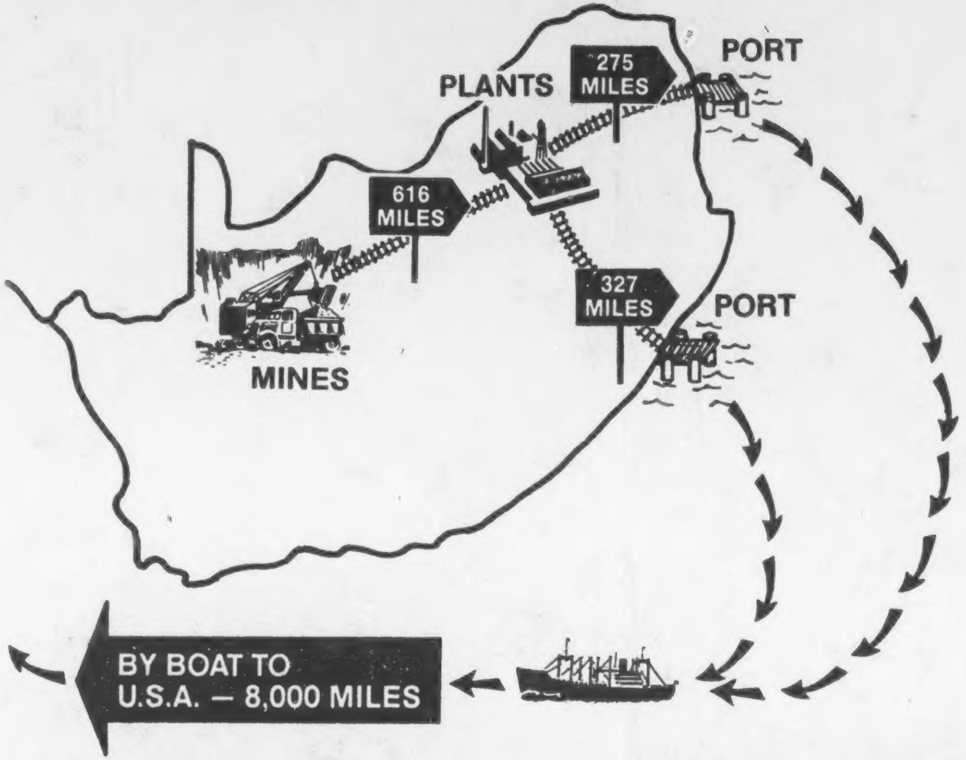

PORT
PLANTS
275 MILES
616 MILES
327 MILES
PORT
MINES
BY BOAT TO
U.S.A. — 8,000 MILES

Figure 4

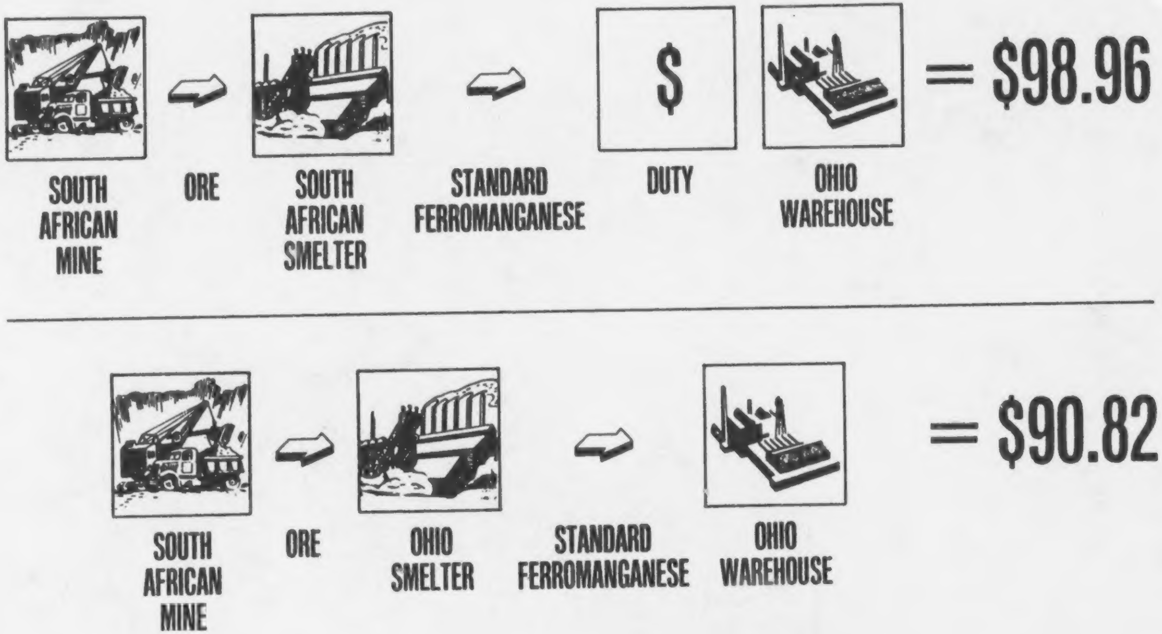
## SOUTH AFRICAN FREIGHT COSTS

## ALLOY vs. ORE

(Freight per Metric Ton of Standard Ferromanganese)

| Costs | Converting South African Ore in South Africa | Converting South African Ore in Ohio |
|---|---|---|
| South African Ore - Mine to Smelter | $36.50 | |
| South African Ore - Mine to Port | | $27.19 |
| Outloading Ore at Port | | 5.59 |
| South African Ferromanganese - Smelter to Port | 16.97 | |
| Outloading Ferromanganese at Port | 5.37 | |
| Ocean Freight | 19.75 | 27.26 |
| Unloading Ferromanganese at U.S. Port | 6.50 | |
| Barging Ore to Ohio Smelter | | 12.31 |
| Unloading Ore at Smelter | | 7.66 |
| Barge to E. Liverpool, Ohio Warehouse | 8.27 | 5.50 |
| U.S. duty | 5.60 | |
| TOTAL | $98.96 | $90.62 |

## COST OF SHIPPING


SOUTH AFRICAN MINE
ORE
SOUTH AFRICAN SMELTER
STANDARD FERROMANGANESE
$
DUTY
OHIO WAREHOUSE
SOUTH AFRICAN MINE
ORE
OHIO SMELTER
STANDARD FERROMANGANESE
OHIO WAREHOUSE

= $98.96

= $90.82

**U.S. ADVANTAGE = $ 8.14**

The **Chairman**. Thank you very much. The President has initiated a program of processing about 1,150,000 short tons of manganese ore into 576,822 short tons of high carbon ferromanganese, and some 1,297,000 short tons of chromite ore, into 518,500 short tons of high carbon ferrochromium over the next 10 years.

How will this program help relieve the plight of the ferroalloy industry and thus help the national security? Mr. Watson?

Mr. **Watson**. There is no doubt that it will help the national security. As a matter of fact, 7 or 8 years ago, in the policy statement from the Ferroalloy Association, we recommended the stockpile should include 40 percent ferroalloys on a distributed basis across the board, but, as far as helping the industry continue to operate, it will be a temporary expedient that may help one or two companies.

The problem is that we have four, five producers of each product. The amount of tonnage projected is enough to run one of John Trunzo's furnaces for 1 year if he got it all each year for 10 years, and the chromium would run one of SKW Alloys' furnaces for maybe 7 or 8 years if he got it all, but there are four or five producers each and we don't know how it will be distributed as yet, so it is not likely that it will do anything more than postpone the inevitable—the complete shutdown of ferrochromium, ferromanganese production.

The **Chairman**. Is there a possibility—to put it in a different light—a likelihood that the world metals market would change sufficiently during that period of time that the period of time itself becomes important?

Mr. **Watson**. There is always the likelihood that demand will pick up for our product and our stockpile program would be an augmentation to pick up in the general economy, but when you reflect that we are now importing 95 percent of both products, it is hard to see how the stockpile program will do anything to stop imports, and that the more likely result is that our friends in South Africa and other countries of the world will increase their capacity in the full expectation of supplying this market almost completely, as John has pointed out, in ferromanganese. The same situation applies to chromium.

The **Chairman**. Any other comments from either of the other members?

Mr. **Collins**. Not from me.

Mr. **Trunzo**. I think it is like putting a bandaid on a major wound.

The **Chairman**. In August 1981, the ferroalloy industry requested that the Department of Commerce investigate whether imports of ferroalloys constitutes a threat to our national security under section 232 of the Trade Expansion Act of 1962.

On August 13, 1982, the Department of Commerce forwarded their report to the President containing the results of that investigation. For so-called national security reasons, this report has not been made available.

Would it be valid to assume that the results of the Commerce Department investigation and the subsequent upgrading program in terms of the stockpile means that our national security is being threatened by imports?

**Mr. WATSON.** I would say there was a strong implication in the published statement, and the fact that a review was suggested in the statement at the end of a given period of time when the stockpile program would be further assessed to see whether or not our national security was still threatened by imports, the implication is that there was a threat and perhaps a stockpile program would relieve that, but let's take another look.

**The CHAIRMAN.** If the United States loses its capacity to produce ferroalloys, how large would the stockpile for these materials have to be to assure our national security?

**Mr. WATSON.** Under the present thinking, at least a 3-year supply of all of the ferrochrome, ferromanganese, and ferrosilicon products; we visualize that in an emergency demand would probably approach around 3½, perhaps 4 million tons of chromium, manganese, and silicon ferroalloys in an emergency year as opposed to our maximum year of a little over 3 million tons say in 1973 or 1974, and a stockpile then would have to be somewhere close to 10 or 12 million tons of ferrous ferroalloys, some of which don't store too well, particularly the silicon ferroalloys, and the cost of such a building, if we made a rough cost, it would run $4 billion.

**The CHAIRMAN.** 4 billion?

**Mr. WATSON.** $4 billion or more, without any ferroalloy industry.

**The CHAIRMAN.** What is the spread between U.S. production and import costs in dollars? You have indicated they are underselling, although you have a competitive advantage, you think, in cost of production.

**Mr. TRUNZO.** It varies from ferroalloy to ferroalloy. For ferrosilicon—Jack, do you want to comment?

**Mr. COLLINS.** Yes. I think on the ferrosilicon product, in looking at the equipment, for example, they run in Brazil which is slightly smaller than our equipment, they do have a labor cost advantage not unlike the advantage that Mr. Trunzo spoke about in Africa. It is not quite the difference, 25 percent of U.S. cost, but it is a large difference.

I think when you get all done, we would say that the costs are very close to being identical when you apply the trade to get to the U.S. market, and I think there are some noneconomic factors at work in determining the prices of the product. Unfortunately, the selling price in the marketplace is not determined by the cost of production. It is more determined by the supply and demand in the marketplace.

**The CHAIRMAN.** Has international financing contributed to the current plight of the ferroalloy industry in the United States?

**Mr. COLLINS.** I believe it has, particularly in the case of Brazil, for they are very hard pressed, have been for several years now, to generate hard currency for the importation of oil into Brazil, and as a consequence, they are looking for opportunities to export product that they can to generate hard currency. They do have large developments of hydropower which are very attractive to put into ferroalloy form, and they do have manganese ore and chromium ore deposits in Brazil, so there has been international moneys put into the Brazilian industry to permit them to export and to generate the hard currency for their oil needs.

The **Chairman**. Has your industry used the usual trade laws for relief in the past?

Mr. **Watson**. Yes, we have. In August 1981, we had a period of about 3 or 4 months before that date of a serious consideration as to whether or not we should file antidumping cases or countervailing duty cases against subsidies. In fact, we have. We filed subsidy cases against Spain and Brazil. We won the one against Spain, and it is still standing.

The one in Brazil, we withdrew voluntarily when Brazil announced the stopping of their subsidy which they subsequently started again.

We won an antidumping suit against a silicon metal producer, but it was an empiric victory since there was no damage, no injury to the domestic industry. Our feeling was on the case that we had gone through that we spent a lot of money and time and got rather indefinite results and nothing that really helped us and that our problem was far more systemic than just picking out one country at one point in time. For the 29 different countries that export in the United States and the multiplicity of the companies in those countries, antidumping and countervailing duty cases just seem to be a series of problems, and we sincerely thought that chromium and manganese and even silicon ferroalloys are essential to our national security, and we went the 232 route.

The **Chairman**. You haven't refiied on Brazil?

Mr. **Watson**. No; we have not; no. The reason for not refiling in Brazil is that the resumption of their subsidy was permitted under the GATT rule. As they became a member of the subsidy floating GATT, under that rule they were permitted to reestablish subsidy at 50 percent of what it had been, the previous rate before signing. This meant the 25 became about 25 or 15, and that was supposed to have been decreased and wound down by the end of this year, but our President in a gesture of good will to Brazil allowed them to continue the subsidy for another 2 years.

The **Chairman**. How many domestic producers are involved in foreign production directly? Do you run into the problem of having people hurt on this end that are benefited on the other end and ambivalence on the position?

Mr. **Watson**. This industry has gone through a metamorphosis in the last 5 years from an industry of some 12 companies that were all essentially American companies. We found the American owners lose interest and many have sold out to foreign interests. Both Mr. Collins and Mr. Trunzo are in that situation today.

We still have a number of companies that are completely domestic, of course. About 50 percent of our furnace capacity is owned by foreign owners. This has not affected their concern in this marketplace for the promotion of their own facilities.

Mr. **Collins**. I might comment on that. In our case we are owned by a German company. None of the product that we make in Germany do we make in the United States. We are putting some of those specialty products in from Germany. There are other domestic producers of those products.

We do also maintain an operation and we make one product that is competitive with what we make in the United States. We make another product that is not competitive. We bring the one, the silicon metal which we do not make in the United States, we do bring into the United States.

Mr. TRUNZO. We are basically a partnership and we are owned by basically a major ferroalloy producer in Norway called Elkem, and Elkem has 49 percent ownership, and the balance is between shipping companies and banks, but they have allowed the company to be managed by Americans—Union Carbide Division, and the same people that are managing it that were with Union Carbide, and the product, we bring very few products in from Norway—one product that we really don't make in the United States—but I do believe, commenting on the statement you made with regard to financing in Brazil, there appears to be a lot of U.S. banks like Citicorp that has invested billions of dollars in Brazil, and Brazil is in my opinion doing what South Africa did a few years back, is embarked on a campaign to build a very strong ferroalloy industry with the sole purpose of exporting it, with a big piece of the export to the United States, and I am very concerned about that for the future.

The CHAIRMAN. It wasn't in your particular industry, but I recently witnessed a departure of the U.S. business to Brazil with financing from Spain, and I think we are going to see more and more of that kind of a pattern develop unless we are willing to look at what is happening to the export of our industry.

One part of the Trade Expansion Act of 1962 has a legitimate emphasis upon the loss of jobs in this country. We may indeed protect industry, we may indeed protect or acquire the access to materials in at least peacetime if not in time of national distress, but we export a great many jobs if we do it.

Mr. TRUNZO. Just recently we have been—Marietta is having a condition where the import in products that are produced in Marietta which are really ferromanganese, silicon manganese, medium carbon ferromanganese, high carbon ferrochrome, electrolyte chrome, that were hurt by imports, the labor force has been awarded assistance.

The CHAIRMAN. I am not opposed to giving the labor force some assistance, but that is again a bandaid on a self-inflicted wound.

Mr. TRUNZO. That's right. We would rather have the furnaces operating and people employed.

The CHAIRMAN. Senator Hecht?

Senator HECHT. No.

The CHAIRMAN. Thank you very much. I appreciate your testimony.

Mr. TRUNZO. Thank you.

The CHAIRMAN. We will next hear from Mr. George Harris, TRW; Mr. Robert Dunn, Amax; and Mr. Charles Barber, ASARCO.

Your entire statements together with attachments thereto will be made a part of the record in full. You are invited to summarize in whatever manner you would like.

## STATEMENT OF GEORGE A. HARRIS, VICE PRESIDENT, MATERIEL, TRW, INC.

Mr. HARRIS. Thank you, Mr. Chairman. I will summarize my testimony for the record, focusing on a very few points. These are points that are important to me.

As an industrial producer, there is concern about our country's readiness to deal with the shock load on our material supply lines which a national emergency would create. In our present state of preparedness, that shock load would without question seriously crimp our ability to meet essential defense and civilian needs.

In preparing myself to testify before this committee, I reviewed a very large, still very limited portion of the information that is publicly available on this decade-old issue. My preparations have led me to the same conclusion that I have reached many times before—the issue is indeed very important. It actually involves a number of separate but interrelated issues, all of which are very complex.

Not nearly enough progress is being made to solve long-standing problems in material vulnerability and preparedness, and it is literally almost impossible to contribute anything really new which hasn't already been said before on this subject. Nevertheless, I consider it my duty to try, and I thank you for providing both this opportunity for better public review of the problem and for the hope that as a result the solution may be found.

To reemphasize my first conclusion regarding the importance of the issue, may I remind you of the statement you made to the Allegheny International, Inc., as they testified during the first day of these hearings on May 19. I totally agree and cannot state it more clearly than you did, and I quote, "When all alternatives fail, we move to our last and probably our best line of defense—the stockpile." The primary focus of my statement for the record is upon the stockpile, but you yourself, Mr. Chairman, have already flagged one of my strong concerns about it when in your opening statement on May 19 you cited the General Accounting Office's report and the finding that, quote, "At the current rate of funding, it will take over 60 years to fill the stockpile with needed materials," unquote.

I find that situation virtually incomprehensible at this late date in history given the role which the United States plays in the world which I am sure we hope to continue fulfilling in the future.

In my statement for the record I have gone to some length to remind you and others who are attending to this issue of what I refer to as the dynamics of the supply situation and how drastically they have changed in the past 10 years.

I refer to that dynamics are part and parcel of what you so appropriately have termed the geopolitics of minerals, Mr. Chairman, as you probably know, but I also note from my full statement that the minerals and metals marketplace now involves appreciably more troubling distortions and uncertainties than only a relatively short period ago. These new circumstances dictate a new set of risk management attitudes and practices and industries, and I think in government as well.

The brief description of TRW and its diversified technology products contained in my written statement plus the example quoted and appended to the statement will clearly indicate to you, Mr. Chairman, why I characterized TRW as sitting squarely on the middle of the production pipeline, as having the flexibility to serve both peacetime and national emergency needs, and as benefiting from a vantage point which is representative of both large and smaller businesses—the overall question of material availability in the true national perspective.

Also appended to my written statement is a paper which I strongly commend to your attention, a talk by my TRW colleague Dr. Arden Bement, which clearly describes the seriousness of TRW's own internal risk analysis, the long-range resources planning factors which are involved, and the strategies which our company has taken to reduce our dependence, vulnerability if you will, upon critical and strategic materials.

Based upon the TRW perspective and the marketplace experience which I have touched on and which are amplified in my statement for the record, we have arrived at other conclusions and views which will be of concern which I have stressed regarding beyond the length of time that it may take for the stockpile.

Briefly stated, my views concerning what my full text identifies as specific action priorities are as follows. First, based upon findings less than a year ago by what I believe to be a highly authoritative panel under the National Materials Advisory Board, the critical need for competent review and recommendations concerning all key aspects of the stockpile—quality, form, quantity, that is, the validity of the goals—has been reaffirmed, and second, it is encouraging that the first two of such studies were initiated last fall and are apparently close to completion and publication.

Third, however, I can find no evidence even at the relatively inconsequential cost of such essential studies, that there is any certainty as to their being conducted and funded on a continued deserved priority basis. If the Government fails to maintain an increased momentum in these analyses, it perhaps will not surprise most industrial purchasers, but we will be keenly disappointed if that turns out to be the case. Much remains to be done even when the priorities are narrowed to those which have now been identified by the National Materials Advisory Board.

Fourth, unless an appreciably greater progress is promptly triggered toward meeting inventory goals and unless the results perhaps are clearly and properly reported, industry will have an ever less adequate base of knowing what real preparedness value the stockpile can promise us.

Fifth, the economic and political policies' potential and temptation for an administration to manipulate the stockpile guidelines in order to ameloriate the Federal budget deficit must be removed, and this problem has continued to exist in spite of repeated statutory amendments which have attempted to preclude it.

It appears irrefutable in both the GAO letter to Senator Levin of July 16, 1982, and in view of the urgency expressed by Chairman Humphrey of the Preparedness Subcommittee in introducing his bill, S. 2906 last September, if for no other reason than the concerns which I just just summarized, my final point inevitably must question the adequacy of the executive branch policy guidance and program direction, a question raised in full appreciation of the major and hopefully historically significant step forward which was reflected in the President's April 5, 1982, report to the Congress.

Both the public record cited in my complete statement and the continued existence of problems or action priorities such as those which I have mentioned clearly suggest the top-level management and key supporting functions can and should be strengthened to be better consolidated and should be more permanently institutionalized.

In saying this I hasten to add that I intend no criticism of dedicated individuals, personnel of numerous separate agencies which have in so many cases demonstrated constructive results, for during the first year of the President's program it is certainly my experience in industry that major risk analysis and risk containment efforts must have clear, authoritative, and forceful leadership within an organization, and I think there can be no room for anyone kidding himself and believing an occasional violation of the spirit and intent of the Stockpile Act can be justified. Our national security and industrial readiness to support it hang too much in the balance.

I believe my written statement more completely supports the points which I have just summarized verbally. Mr. Chairman, I appreciate the opportunity that you have provided for concerned citizens and a company to express their view.

Thank you.

[The prepared statement of Mr. Harris follows:]

### STATEMENT OF GEORGE A. HARRIS
### VICE PRESIDENT, MATERIEL
### TRW INC.

### TO THE SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES IN ITS HEARINGS ON GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS

June 20, 1983

Mr. Chairman and members of the Committee, as Vice President of Materiel for TRW Inc., I concentrate largely on matters involving the planning, acquisition and transportation of materials required for our manufacturing activities. I will have more to say about the relevance of our experience in a moment.

"Geopolitics" is highly appropriate as the theme of your hearings: not only are the geologic and other sources of our essential minerals and materials dispersed worldwide, but also, as you well know, the United States role is worldwide -- whether viewed in the perspective of peacetime trade and commerce or in that of military readiness to preserve peace and the values of Western society. My understanding of the first day of these hearings suggests that the challenges and risks which the U.S. faces in either dimension have been adequately covered, and I will therefore not repeat them. Instead, I would like to examine what I see as the tools at the country's disposal for meeting those risks, their adequacy, and their management as the U.S. fulfills its roles.

The need, of course, is to view and analyze the total strategic materials program in a cohesive and balanced manner if soundly integrated overall judgment is to be reached. This need has not yet been met. However, Mr. Chairman, I am well aware of the leadership and responsibility which you, Senator Warner, and others have demonstrated over the years in well-balanced preservation and use of vital resources in the best public interest. The industrial community respects and apppreciates your key contributions.

While there is considerable unanimity of viewpoints in the business community about the major sources of concern and key objectives for improvement, we also may occasionally differ with respect to one or another particular. To me, that simply demonstrates the great value of, and need for, this type of public process, on which I congratulate you and the other members of the committee.

## Urgent significance of hearings

Despite the fact that the issues which this Committee is now considering have received careful and comprehensive attention by many experts over many years, I welcome the opportunity to present additional testimony for two fundamental reasons:

> First, I believe that there is a need to keep reminding the Congress, the Executive Branch, industry, and the public of the continued existence of a very serious, longstanding deficiency in national preparedness, and a corresponding need to recommend solutions, or at least improvements, wherever possible.
>
> Second, I believe that there is a need to reflect industrial and purchasing perspectives and judgment on the issues of materials supply. There should be a better appreciation of their dynamics and of the powerful influence they have on the probabilities for successful implementation of needed solutions and improvements. These dynamics are so influential that periodic, ad hoc plan revisions and sporadic injections of funds -- no matter how excellent some individual plans may be or how large the funds -- will come to little more than failure on a large scale unless a way is found to institutionalize the process for achieving national materials preparedness more effectively and permanently. By the term "process", I include determination of Stockpile goals, mix, quality, and form, plus analysis of trade-offs involving preparedness measures which are separate from Stockpile management itself, yet can complement and better validate it.

With the above needs in mind, I will focus my testimony on three distinct elements:

I. First, I try to spell out my point about the dynamics of the supply situation as they are faced in industry, and as they must certainly be faced with even greater care by government managers of the Stockpile.

II. Next, I focus on specific action priorities regarding the Stockpile itself.

III. Finally, the risk and assessment and containment actions which TRW is taking are described in a paper which my colleague at TRW, Dr. Arden Bement, presented at a recent conference sponsored by the U.S. Department of Commerce and which is appended to my statement. As you may be aware, Dr. Bement is a member of the National Materials Advisory Board (NMAB).

I will emphasize the key importance of the Stockpile itself, but this is not meant to imply that other "tools" should not also be exploited wherever they can contribute to improved national security. For example, these include: Title III of the Defense Production Act, implementation of Trade Development Program objectives now being pursued by the Commerce and State Departments, closing data gaps in the fields of substitution technology (as being undertaken by the inter-agency group which has developed the excellent "Minerals Data Source Directory"), and better access to marketable domestic minerals reserves. Based upon sound trade-off analysis, authoritative management decisions, and positive program leadership, such steps can complement -- and perhaps reduce -- some Stockpile requirements.

## I. DYNAMICS OF CHANGE IN MATERIAL SUPPLY

TRW's and my views are based on the fact that TRW is a diversified, technologically oriented company. We actually use about one-half the Stockpile's total list of metals. The principal businesses of TRW and its subsidiaries are the design, manufacture and sale of products for industry and Government and the performance of systems engineering, research and technical services. TRW's products and services include automotive original equipment; automotive replacement equipment; electronic components; computer-based and analytical services; electronic systems, equipment and services; spacecraft, fasteners, tools and bearings; pumps, valves and energy services; and aircraft components. Attached to this statement are photographs of a few representative products which we make and which show examples of numerous critical materials required.

As you can see, TRW is largely an industrial producer of goods and services for other industrial customers and Government. As has been the case in four previous wars in which TRW has served the nation, the products which we manufacture in peacetime are likely to be very much the same ones which the United States would continue to need when mobilized during periods of national emergency, whether to fill defense, basic industrial, or essential civilian needs.

Perspectives from mid-point in the pipeline

We sit squarely in the middle of the production pipeline. We do not mine, extract or process raw materials (except relatively small-scale processing). Neither do we sell directly into retail markets. This "middle" position, with the flexibility to serve both peacetime and national emergency needs, is the same as that occupied by a large number of businesses -- small as well as large -- in the United States. Thus, the problems of anticipating final-user demand in the marketplace, as well as of planning for materials produced by the head-end of the supply chain, provide us a challenging but representative vantage point from which to examine the question of critical and strategic materials supply availability in a national perspective.

The reliability, durability, and quality of products manufactured by TRW require our using a large number of the materials listed in the Stockpile inventory, as well other advanced substances.

For example, they include steel, stainless steel, pig iron, titanium, ferro-chrome, aluminum, cobalt, magnesium, brass, copper, hafnium, cadmium, tin, tantalum, molybdenum, tungsten, manganese, columbium, silicon, beryllium, platinum, special alloys, glass, ceramics, plastic powders and laminations, carbon and plastic materials, synthetic rubber, and gold, silver, nickel, zinc and copper plating materials.

> "While shortages of certain materials, equipment and component parts have existed in the past and may exist again in the future, TRW has not experienced any significant disruptions from such shortages. TRW has taken a number of steps to protect against the unavailability of materials, equipment and component parts and to minimize the effect of shortages where anticipated."

The above paragraph appeared in our 1982 Form 10K report to the Securities and Exchange Commission. 1982 was a year of general ease in supply markets. There was excess manufacturing capacity on a worldwide basis, delivery leadtimes typically ranged from prompt to very prompt, and U.S. prices for the kinds of materials which we buy inflated by less than 4% overall, with those traded on a worldwide basis reaching price lows rarely seen at the bottom of earlier business cycles.

Almost ten years ago, in our 1973 and 1974 10K reports, comments on our supply position reflected the same generally self-reliant judgment as for 1982 concerning our ability to obtain supplies of materials and components adequate to our needs.

Supply conditions in the years 1973-74 were substantially different from those in 1982, however. To say that supply markets were then in an uneasy state would be a distinct understatement. Inflation for our kinds of materials was at a rate of somewhat over three times that experienced last year. Beginning in 1972, delivery times became long and often unpredictable, and there were persistent shortages of many materials. Rationing of scarce supplies and production capacity to longstanding customers was commonly practiced.

TRW nevertheless managed, as did industry generally, to maintain production schedules reasonably well in the face of the widespread "peacetime" shortages of the early '70s. I have no doubt that we can do so again in the future in the face of similar circumstances, but the point is that we have had to change our habits greatly.

During the years between the boom of the early '70s and the start of the recession which has just ended, both the predictability of prices and the reliability of supply deteriorated significantly. In previous history, only a few metals such as copper and lead displayed the kind of volatility in price which more recently has characterized prices for a great many basic materials. Earlier, natural disasters and work stoppages had been the primary imponderables with regard to managing supply. Although sometimes the political stability of the country in which a raw material was mined and processed became a major problem, there usually were alternate sources. Copper, for example, had always been available, at a price, and when the volatility and level of its price became speculatively distorted, there were always substitutes, at least for many users.

Ten years ago a buyer relied on his suppliers' strategies. Most of his suppliers were private corporations. He didn't worry much about natural disasters because there wasn't anything he could do about them and the supply system was elastic enough to react to such events. He did try to maintain an early-warning system with regard to labor relations insofar as these might have a bearing on interruption of supply. Trade papers usually kept him well informed regarding the political stability of those countries in which major sources of supply were located and also with regard to the traditional economic conditions of supply and demand.

## New challenges

Since the boom years of the early '70s, however, buyers have begun to worry about a whole new list of considerations, or if not all new, at least of significantly greater importance than in the past.

In no particular order of priority, these include: (1) the economic and political philosophies of leaders of the countries in which sources of supply are located; (2) the political continuity of leadership in those countries; (3) income distribution in those countries; (4) rival political groups which might be contending for leadership; (5) the level of social unrest that might be present; (6) the external relations which countries have, as evidenced by their foreign policies and by their policies towards private investment from abroad, or towards consumer countries; (7) the role of coercive power in the supplier country's internal management of affairs; (8) currency problems; (9) threat of hostilities, on whatever scale; and I suppose the list could be expanded further.

Explaining these changes in geopolitics, of increased volatility of prices, and of reduced reliability of supply in terms of any single list of causal factors may be an oversimplification, but some of them are worth itemizing if only to serve as reminders of how radically the environment has changed.

First, there has been a growing separation in the metals industry between production and consumption. In the past, the large private investor companies which found, recovered and processed materials did so on a global basis, keeping in close touch with their customers and gearing their production accordingly. This had a stabilizing effect on supply in years gone by. However, many of these producers have since been acquired by governments whose production decisions often are not based on customer requirements but instead aim at such national objectives as maintenance of employment levels and promotion of foreign-exchange earnings.

Second, we have seen how political instability in certain African countries has influenced price and availability of chrome and cobalt. And we see today that events in South Africa, which the newspapers recently have headlined as the possible beginning of a "Cycle of Terror and Reprisal", conceivably can lead to broader conflict or other problems.

As an additional example, there have been efforts to politicize the production and marketing of a number of metals in much the same way that OPEC has done with oil. Examples where this either has been or still is being attempted include bauxite, copper, tin and rubber. The list would be longer if we include the effects of nationalistically inspired trade barriers. Environmental legislation also has had, in some cases, an unpredictable and destabilizing effect on investment in and production of metallic minerals.

We have seen business cycles seriously exaggerated by the consequences of production and inventory decisions which were inadequately disciplined by basic supply-vs.-demand market considerations. Currency problems arising from individual nations' efforts to manage inflation and unemployment have also had an effect, as has what amounts to erosion of the sanctity of contracts. Finally, as a consequence of all the above, investment incentives have been significantly diminished for private producers.

The results of these kinds of changes -- experienced over relatively few years -- are very clear. For all industrial buyers, increased unpredictability and volatility of prices and uncertainty as to supply availability are considerations which will become far more important for the future than they have been in the past. The same holds true for the General Services Administration in its role as the U.S.'s principal "commodities broker".

The acquisition of materials to meet TRW's needs is accomplished by over 100 relatively small purchasing departments, each of which is closely connected to its own TRW manufacturing facility. In the aggregate, they spend almost $2 billion annually. As you may well imagine, because of the large variety of materials and products which I mentioned earlier, we have a very large number of suppliers. It only takes an annual purchase volume of $5 to $10 million obtained from any one of these suppliers to place him on our list of the top 100. These characteristics of size, dispersion and variety, when coupled with our position in the middle of the supply chain, make us highly representative of U.S. manufacturing in general, we believe.

A chief concern of our buyers is constantly to try to anticipate and take steps to mitigate the costly effects of periodic conditions of shortage, whether widespread or specific to a particular material. The kinds of planning and risk analysis which we do are well described in the attached address by my colleague at TRW, Dr. Arden Bement, before the Department of Commerce's "Seminar on Materials Risk Management" last October. We believe that some key features in our approach are pertinent to the challenge which continues to face the U.S. Government.

## Factors affecting the future

But as I have already mentioned, the conditions from which the most recent period of pervasive shortages arose are changing. The next such period may well reflect quite different characteristics. I will name only two examples which we are watching carefully.

First, the flexibility which U.S. industry has had to increase its supplies of materials from on-shore sources in the face of either sudden surges in demand or unexpected interruption of imports is being noticeably reduced. This results from intense worldwide competition in such industries as steel, electronics, autos, and others. Production capacity in this country is increasingly being displaced by foreign imports, and is also increasingly being integrated -- vertically -- with overseas capacity. Developing countries in particular are insisting on more downstream processing being done locally, and some even prohibit export of raw ores.

Second, reacting to pressures of international competition, much of U.S. industry has been investing intensively in improvements in productivity, quality and materials management systems. Each of these responses will produce some successful results, and each success, particularly in the area of materials management (where the Japanese technique of Kanban inventory and production control has caught the imagination of U.S. industry), will have the effect of shortening delivery pipelines and wringing out inventory cushions which traditionally have been available to meet sudden and unpredicted demand surges. Therefore, our very successes in meeting the pressures of international competition will themselves produce an even more tightly-coupled supply chain, including fewer surgepools of materials. This consequence as yet may not be fully appreciated in the planning approaches used by U.S. industry, let alone by government.

## II. STOCKPILE ACTION PRIORITIES

My preceeding description of major changes in the dynamics of the worldwide supply situation over recent years leads to what I see as the specific action priorities which they dictate with respect to more effective direction and implementation both of the Stockpile and of the national materials program.

There were two specific points made in the statements presented at this Committee's hearings on May 19th that capture the essence of my concern about the Stockpile.

The first appears in your own opening statement, Mr. Chairman, and cites an estimate by the General Accounting Office that "at the current rate of funding, it will take over 60 years to fill the Stockpile with needed materials."

The second statement, coming at the conclusion of several recommended courses of action by Mr. E. F. Andrews of Allegheny International, Inc., stated: "when all alternatives fail, we move to our last, and probably our best line of defense -- the stockpile".

The considerable number of disparities between what needs to be done and what has actually been done to improve our national preparedness for emergencies have been extensively analyzed and written about for many years. But the particular disparity which is highlighted by those two statements seems very hard to understand, let alone accept.

The condition of the Stockpile

May I call your attention to some findings excerpted from a preliminary study published last year by the National Materials Advisory Board (NMAB-378) which bear on the question of the form and quality of materials in the Stockpile:

1) "Much of the material in the present stockpile is in a state of technological obsolescence..."(page 5)

2) "Specifications to which material that has been or is being acquired for the stockpile are frequently inadequate for present and future needs."(page 141)

3) "The latest issues of stockpile purchase specifications for the material considered in this study are as much as 20 years old."(page 141)

4) "Because a of compelling need to build stocks of materials that were far below current goals, acquisitions were made of materials known to be below stockpile specification grade."(page 141)

5) "Stockpile disposals have tended...to emphasize disposal of the purest, most desirable forms, and to leave behind the least pure, least desirable forms."(page 140)

6) "It appears that past management of the stockpile has almost exclusively emphasized the quantitative aspects of the stockpile and has been excessively ad hoc in character."(page 144)

Further, I understand that two volunteer, private-sector panels of highly qualified individuals representing materials producers, processors and end-users have been conducting additional studies related to the quality and usefulness of materials in the Stockpile. These studies are being conducted under sponsorship of the National Materials Advisory Board and of the American Society of Metals and are responsive to the President's program announced last April and its call for such studies.

One study has addressed preliminary questions of priority and methodology which are to precede further studies designed ultimately to reach authoritative conclusions as to what needs to be done in detail, commodity by commodity, in order to raise the quality and usefulness of materials in the Stockpile to required levels. The other study has nearly completed its thorough review of stockpiled cobalt.

Will evaluations actually be completed?

I am reassured by published results to date, and by the announced objectives of these studies which are in process. They represent constructive use of scientific and technical expertise available from key individuals in government, academia, and industry, and provide an opportunity for giving authoritative, objective guidance to Stockpile managers. But I am somewhat skeptical that the vitally needed follow-on efforts to realize their ultimate potential will be vigorously pursued. I hope that I am premature or even wrong in my judgment. I would be willing to guess, though, that either or both of these studies will not progress to completion or to substantial implementation of their recommendations, either because of lack of funding or because of changes in priority. If either of these events occur, I would be greatly disappointed -- but not really surprised. This is about the same reaction I would expect from most of the purchasing managers whom I know.

As a group, I think that industrial purchasers are perhaps cynical that such studies will actually be completed and implemented. Further, by now too many may have come to doubt the likelihood of sustained improvement in the adequacy of the Defense Stockpile. As a result, they neither follow the developments on this subject very closely, nor actively attempt to contribute to and influence their proper direction.

Even more importantly, efforts within individual companies to maintain flexibility in materials planning risk the possibility of becoming totally divorced from any adequate knowledge of the Stockpile and its management processes. And that's too bad, because we in industry should periodically assess our supply position not only in terms of our own individual ongoing commercial requirements, but also relative to future conditions that appear to foreshadow a possible national emergency and our roles and capabilities to help meet it.

The time which a good stockpile gives us, simply by being there when a national emergency arises, is essential for developing new supply alternatives. The time in advance of such emergencies is also valuable for making plans and adjustments of the kind which industry can and will make on its own initiative, assuming it has the adequate information base from which to do so. Illustrations of the kinds of risk-management planning for materials in which TRW is engaged are included in Dr. Bement's talk, attached to my testimony.

When will goals be met?

Although good plans and analyses of Stockpile materials are required, as well as sound recommendations for improving their quality and usefulness, these will not be enough. There must also be confidence that progress will ,be made toward meeting those recommendations within a reasonable number of years.

In addition, the goals for quantity and mix of materials need to be reexamined, perhaps by some blue-ribbon panel and in much the same constructive and objective manner as is reflected in the form and quality studies to which I have already referred.

I note, for example, that the Administration's plan for streamlining the Annual Material Plan process for the Stockpile (as included in the President's National Materials and Minerals Program Plan and Report to the Congress) consists of: (1) five-year planning guidance for GSA's acquisitions and disposals; (2) a fiscal plan that matches budget ceilings, market conditions, immediate strategic considerations, and GSA purchase activities; and (3) a study of inventory deficiencies. My reaction is that these are very sensible things to do, and I assume that these are not necessarily new thrusts but are the continuation of earlier ongoing efforts. My belief that there is a need for another objective review is based on what I see as a probable need to update the assumptions which form the present basis of the planning process.

These planning assumptions are described in the President's report to the Congress where it states that one of the key elements of Stockpile policy is:

> "That goals reflect detailed assumptions regarding changes in a wartime civil economy, wartime foreign trade patterns, shipping losses, wartime political and economic stability of foreign nations, and alternate foreign and domestic production levels for stockpile materials."

It should be noted that those assumptions were based on a major interagency effort and endorsed by President Ford on August 6, 1976 and later reaffirmed in October of 1977.

This statement -- made in 1982 -- raises more questions, some disquieting, than it answers.

The bottom line is that the nation must have a stronger basis for confidence that progress for improving both the "form and quality", the "mix", and the "quantity" will be made over some reasonable number of years through acquisition, disposition, and related activities. What that number of years ought to be is not clear to me, but it must be something considerably less than the 60 years cited in your opening statement, Mr. Chairman. Perhaps ten, at most, but that is a ball-park estimate on my part.

But whether a funding plan and an execution plan will be based on ten or on more years seems at the moment to relate more to answers to broader issues of federal taxation, spending and the level of budget deficits than to consonance with threat estimates and proposed defense build-up rates. I conclude that if the funding required for good studies of quality and usefulness of materials already in the Stockpile is a chancy possibility, then the prospect for actually obtaining the larger monies required to carry out the turnover and acquisitions which are likely to be recommended by such studies is far chancier. This statement is in no way intended to disregard the critical requirement for federal fiscal restraint as the key to a lasting, stable economic recovery.

What is the purpose of the Stockpile?

The immediate issue seems clear to me, however. The Stock Piling Act states that "The purpose of the stockpile is to serve the interest of national defense only and is not to be used for economic or budgetary purposes."

In spite of that repeated statutory intent, the public record nevertheless contains many informed judgements that this purpose may still not be being carried out. To cite a few examples:

Mr J. Dexter Peach, Director of the U.S. General Accounting Office, in a letter of July 16, 1982 to Senator Levin included these points:

> "It appears that the administration has given priority to budgetary considerations over defense-related needs."
>
> "While the President's fiscal year 1983 budget and long-range projections reflect an intention to expeditiously dispose of stockpile materials currently held in excess of goals, we do not believe that it reflects a serious commitment to acquire additional materials. No apparent attempt was made to correlate the budget with either the President's March 13, 1981 statement or April 5, 1982 program plan".

And from the Congressional Record, September 14, 1982, Senator Humphrey re S 2906 (a bill to take the Stockpile Transaction Fund off budget):

> "...revenues accrued in the stockpile transaction fund are used to offset the Federal budget deficit, resulting in serious shortfalls in materials inventories."

Transaction fund off-budget?

Steps have been taken during the last year to confirm that the Stockpile Transaction Fund at least is even more clearly identified as a revolving fund for Stockpile uses only. Mr. Chairman, no doubt you and your colleagues have also given much thought to the question of off-budget funding for the purposes of the Stockpile as well as in connection with other areas of application, such as for the Strategic Petroleum Reserve. I imagine also that there are many pros and cons of both general principle as well as of practicality in specific applications that must be analyzed. But from my point of view, I can see no course of action that would be as effective, over the near term, for facilitating an orderly process of funding Stockpile requirements as would be the off-budget process reflected in Senator Humphrey's bill, S 2906, in the 97th Congress. I believe that a step in this direction should have been taken long before now.

I do appreciate that off-budget treatment of Stockpile funding will only safeguard the opportunity for recycling those monies potentially available from the disposition of materials currently in excess. That excess amounts to some $4.7 billion, according to Mr. Carroll Jones, Comissioner of the Federal Property Resources Services, as stated during his House appropriations testimony in March of this year. The time which will be required both to realize that "income" from sale of surpluses and to apply it to purchases which will reduce shortages is not insignificant, if markets are not to be unduly disrupted.

Over and above the necessity of recycling that $4.7 billion of excess materials into fresh inventories of other needed materials, there is an additional estimated deficit of Stockpile requirements which amounts to $5.3 billion, again based on Mr. Jones' testimony. Such additional funding requirements must sooner or later engage the policy attention of both the Administration and the Congress. Hopefully the conditions both of the U.S. economy and of federal fiscal management may be in better shape by then. Taken together with the value of present excess materials, the total transactions required represent a major amount -- $10 billion dollars. Committing such a sum will test both the policy/priority setting as well as the planning and execution machinery of both the Congress and the Administration.

Who is in charge?

Finally, on the most important subject of policy guidance and program direction, I quote again from the President's report to the Congress:

> "It is......the position of this Administration that national materials policy will be coordinated through the Cabinet Council on Natural Resources and Environment."

And from the President's National Security Decision Directive Number 47, July 22, 1982:

> "The program will ensure the availability of strategic and critical materials by primary reliance on the National Defense Stockpile...."
>
> and,
>
> "Any issue which cannot be resolved by the Board [Emergency Mobilization Preparedness Board] within the framework of current Administration policy will be referred to the National Security Council for resolution and Presidential decision

I must confess that, based simply on the information that is generally available on a public basis to any interested person, I find that the above statements leave me with more questions raised about Executive Branch management than are answered. I simply am unable to connect these statements, and many similar ones, with the specific evidences of management which are quite visible and which I have been discussing.

Are we kidding ourselves?

It seems to me that the fundamental problem with the Stockpile is that although by law it is exclusively for support of defense, basic industrial, and essential civilian needs during periods of national emergency, in actual fact it has been used for such other purposes as:

- budget balancing
- combating inflation
- support of extractive and processing industries
- price stabilization
- defense against foreign price gouging
- defense against foreign supply disruption
- assistance to developing countries .

The priority problem, then, is not so much with the administrative planning and operational management of the Stockpile itself, although there probably are many improvements which could be made in these processes. I have referred to some of them earlier in this testimony. The effects of such improvements, however, are likely to be smothered in the wake of consequences that stem from higher-level policy decisions which are at odds with the stated purpose of the Stockpile.

If, as is alleged from time to time, the Stockpile has far too much or too little bauxite in it -- or copper, or silver, or whatever material -- and if such excess or shortage was created for reasons other than to meet the stated purpose of the Stockpile, then we are kidding ourselves about the improvement potential from form and quality studies, from changing funding procedures, from more effective administrative and planning reviews, or from fewer separate legislative and appropriations subcommittees' involvement, etc. The gap between statutory intent and what actually has been done is at the root of the cynicism to which I referred earlier. If such an attitude is found to be prevalent with industry, it is likely to be present in other parts, and no doubt will grow.

Either the purpose of the Stockpile must be changed to meet the actual "facts of life", or the policy and direction which guides its management must be brought into line with the stated purpose.

In either case, I believe that it is absolutely essential to insure that measures of risk be published in order clearly to identify the state of readiness of the Stockpile for meeting the needs of industrial emergency preparedness. Such measures of risk must be visible to industry as they examine their own readiness to meet the future needs of a possible emergency situation.

Mr. Chairman, I have tried to give you the views of a concerned citizen and company, who probably can never be able to achieve a full and current awareness of all the important facts which are available, even on the public record, and who have no access to classified information in this area.

I have tried to make clear where my facts leave off and where my opinions and judgments begin. To the extent that my remarks about the policy and planning processes of the Executive Branch may appear to be critical, I assure you that these are meant in a constructive vein, and that I am well aware of numerous noteworthy accomplishments by many of the individual agencies and departments involved.

As I examine the implications of the major changes that are continuing to occur in just the areas of supply/demand for existing materials, and then begin to consider the rapidity with which the form and quality of those materials are changing as a consequence of technological developments, I conclude that ways must be found to institutionalize the basis for planning and implementing Stockpile decisions more soundly and more permanently. This implicitly requires that review processes be on an iterative, continuing basis, critically and constructively examining all factors and considerations which can result in those decisions being most cost-effective, while adequate to preserve a fundamental "life-line" for the United States.

Attachments:

1) Photographs of selected TRW products.

2) "The Role of Business in Managing Strategic Resources", an address by A. L. Bement, Jr., vice president, Technical Resources, TRW Inc.,

## EXAMPLES OF TRW PRODUCTS

From among hundreds of varied TRW products, the qualities and characteristics of which are achievable only through use of Critical and Strategic Materials, the photo shows seven random examples; clockwise from upper left, they are:

Fasteners (in this instance, for medical devices such as electrocardiogram sensors) use Gold, Tin, Cadmium.

Electronic components use Tantalum, Platinum group metals, Nickel, Gold, Tin, Zinc (the photo shows large-scale integrated circuit).

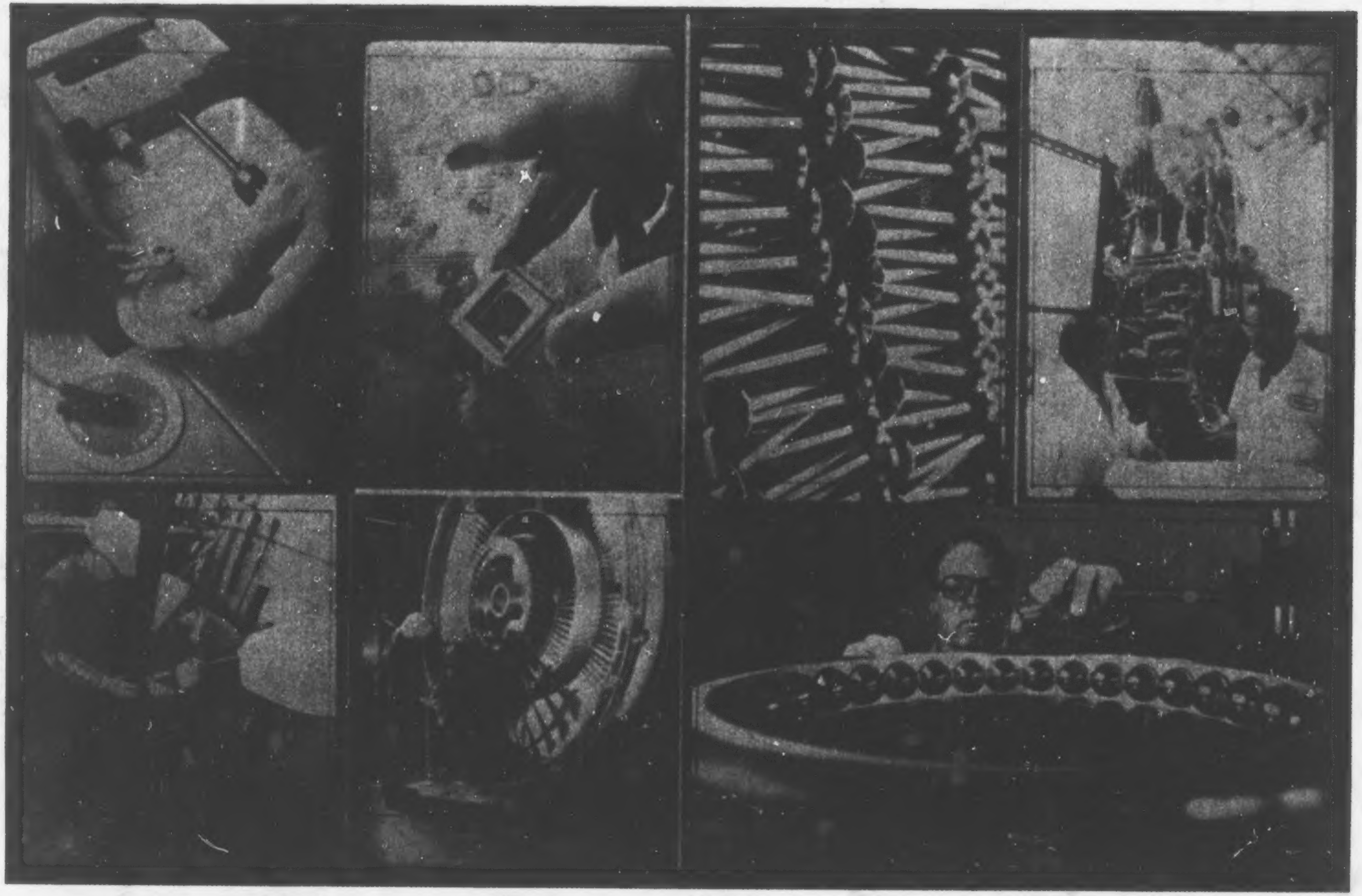
Engine Valves of all sizes use Chromium, Nickel, Titanium, Cobalt.

Spacecraft and spacecraft subsystems and components use Titanium, Nickel, Tantalum, and other metals.

Precision bearings use Chromium, Molybdenum.

Turbine blades (in this instance, for large jet engines) use Titanium, Chromium, Cobalt, Hafnium.

Oil and natural gas production equipment (drills, pumps, valves, etc.) use Nickel, Chromium, Molybdenum, Maganese, Tin, Zinc.



ADDRESS TO

CONFERENCE ON MATERIALS RISK MANAGEMENT
U.S. DEPARTMENT OF COMMERCE

# "The Role of Business in Managing Strategic Resources"

Washington, D.C.
19 October 1982

Arden L. Bement, Jr.
Vice President, Technical Resources
TRW Inc.

## THE ROLE OF BUSINESS IN MANAGING STRATEGIC RESOURCES

## Introduction

I greatly appreciate the opportunity to participate in this timely Conference on Materials Risk Management and to provide some of my views and those of TRW on the management of strategic resources.

Much has been written recently about whether or not the United States and the rest of the free world is in a resource war with the Soviet Union for those critical non-fuel minerals essential to our industrial base. Furthermore, enough has been written on our import dependence for these materials that it should be clear by now to every citizen that (1) the world's mineral resources are not equitably distributed over the face of the Earth, (2) nor is it economically feasible for the United States to be totally self-sufficient in domestic resources for all key minerals, and (3) the disciplines of risk analysis and risk management are essential if we are to delineate between undue vulnerability and manageable dependency.

As an illustration of my point, and to provide "real world" background for my subsequent comments about the national minerals program, I will describe a partial risk analysis conducted about two years ago by TRW. That analysis revealed that nearly one-third of the company's purchasing volume of supplies and materials for 1980 contained critical materials, resulting in a dependency ratio of sales revenues to procurement costs of nearly 7 to 1. A summary of some of the important defense and civilian products manufactured by TRW which use those strategic elements for which the United States is over 90 percent import dependent is as follows:

A. Cobalt - industrial drills and end mills, threading tools, carbide tools, nuclear reactor control rod drives, and jet engine turbine blades

B. Tantalum - cutting tools, resistors, capacitors, electronic switches and contacts, and jet engine turbine blades

C. Chromium - engine valves for a wide variety of automotive, agricultural and other engines; nuclear reactor control rod drives; transportation hydraulic drives and steering components; petroleum production pumps, drill bits, jet engine casings and jet engine turbine blades and compressor components

D. Columbium - cutting tools

E. Platinium-group metals - electrical resistors and connectors

Self-evidently, these products in turn are essential to a broad slice of the U.S. manufacturing base.

## Perceptions of the Nature and Seriousness of the Strategic Materials and Minerals Issues

TRW's risk analysis revealed the need for long-range resource planning coupled with strategic business planning to guide management decisions throughout the company. This planning was based upon certain key operating assumptions as to the seriousness of risks which a responsible company must either avoid or successfully manage.

These assumptions were derived from a list of critical questions which required an assessment of prevailing trends in the continuing availability of critical and strategic materials. These questions were as follows:

- How long will our high import reliance on critical materials continue?
- What are the long-term demand trends for these materials?
- How much can domestic mining production and scrap recycle contribute to future supply?
- What factors will influence price?
- What are the likely roles of supplier countries, our world competitors and the Soviet Union on long-term supply?
- What solutions can technology provide?
- What can TRW do about it?

An examination of these questions led to the following operating assumptions:

A. The high percentage import reliance of the United States for chromium, cobalt, tantalum, columbium and platinum-group metals will continue out to the turn of the century and beyond.

B. The demand for most of these materials will increase at an annual rate of 2 to 3 percent to the year 2000.

C. Domestic mining production, scrap recycling, and secondary recovery of tailings will probably supply only 10-15 percent of the U.S. demand for these materials under the best of potential circumstances, short of large-scale seabed manganese nodule mining, dramatic technological breakthroughs, or a long-term supply cutoff which could marshall investment in domestic production.

D. The price of these materials will be highly susceptible to temporary supply disruptions, unreasonable price hikes, preemptive market manipulations and source-nation political instabilities.

E. Supplier countries will continue to invest in processing technology and capacity in order to benefit from the value added by refined materials, alloys and mill forms. This trend will have the following major impacts:

   (1) It will further displace the head end of our defense industrial base offshore;

   (2) It will make those parts of our Strategic Stockpile which are in the form of unprocessed or semi-processed materials even more obsolete than they are today, since there will be neither the leadtime nor the domestic capacity to convert these raw or semi-processed materials into the necessary defense production forms; and

   (3) It will place more economic leveraging into the hands of the supplier countries; hence, prices of such materials will continue to seek new levels as dictated by supply control, speculation, and preemptive market maneuvers.

F. International competitors to the U.S. will aggressively pursue a number of policies to secure their supplies of critical materials, to include:

   (1) Geographically diversifying their sources of imports;

   (2) Acquiring direct production and distribution rights; and

   (3) Strengthening their relationships with resource-rich nations by supplying needed technology, production equipment, food and other forms of economic aid.

G. The Soviet Union will continue to wage a resource war with the Western Alliance, since that will

   (1) Put pressure on our allies to choose between the U.S.S.R.'s long-term resources (or control of resources) and the U.S. short-term stockpile, and

   (2) Provide a long-term hedge against decreasing resources in the U.S.S.R. relative to South Africa for platinium-group metals, vanadium, manganese and chromium.

Even in the face of these disturbing and challenging risks, we believe there is a great deal the private sector can do in developing strategies for critical and strategic materials, to include planning, procurement, and technical strategies. We recognize that there are differing views as to the actual severity or immediacy of some of the risks which I have outlined, but prudence dictates "taking out insurance" even when the odds of total cutoff are very low -- but when the consequences of being a low-odds "casualty" are drastic.

For the remainder of my presentation I will outline some of the planning, procurement, and technical strategies that TRW is pursuing to reduce our dependence on strategic materials.

## Planning Strategies

A long-range outlook on strategic materials requirements for existing and new products can be valuable in developing and analyzing future business competitive strategies. Some consideration that can be helpful in supporting planning strategies are the following:

A. Developing a long-term (five-year) strategic marketing forecast to determine the amounts of strategic materials needed to meet production goals.

B. Tracking forecasting trends on materials availability and projected worldwide additions to reserves and production.

C. Requiring that critical materials be considered in new product and process developments and in long-term strategic business planning.

D. Analyzing the risks and impacts of possible supply disruptions, dramatic price increases and allocations imposed by the government and/or suppliers; and developing risk avoidance or containment policies for critical materials supply.

E. Realistically determining your likely position on defense priority and allocation lists for strategic materials. The lower your potential position, the greater your incentive to develop risk avoidance and containment strategies.

F. Establishing vigorous materials management policies and programs that cover acquisition, conservation, substitution and reclamation of critical strategic materials.

G. Openly sharing and discussing this type of information at all organization levels and especially at the Company level, where the discipline of issues management can be brought to bear on long-term scenarios.

## Procurement Strategies

Procurement officers and materiel managers are the front-line commanders when it comes to holding down costs and assuring supply continuity for strategic materials. Some of the strategies they can employ are the following:

A. Encouraging the use of multiple-year procurements to buy materials in economic lot quantities, securing favorable long-term material supply agreements, and buying materials when market conditions are stable and favorable. It may be advantageous to apply these leverages to establish internal stockpiles if and when federal policies provide the necessary and sufficient incentives.

B. Developing multiple sources of materials.

C. Tracing suppliers and sub-suppliers all the way back to the mine source to determine where stockpiling can best cushion temporary shock loads on the supply system.

D. Entering into long-term procurement planning of supply requirements of critical materials with both customers and vendors and negotiate vendor stockpiling and other vendor preferencing programs.

E. Investigating with customers design changes which can reduce or eliminate the use of critical materials, and seeking approved alternates for critical materials.

F. Developing a formalized plan for the recycling or acquisition of upgraded scrap containing critical materials to assure future availability and to minimize production interruptions.

## Technical Strategies

Under technical strategies, materials substitution, replacement and conservation have become active fields of scientific and technical enquiry. These strategies are divided into the following categories: (a) substitution and "displacement", (b) conservation through design and processing, (c) reclamation, and (d) life extension.

### A. Substitution and Displacement

Some substitution and displacement options include:

(1) Evaluating, in cooperation with customers and suppliers, the properties of new alloys containing reduced strategic material content.

(2) Developing fabrication and processing methods to enhance the properties of such alloys to meet performance requirements.

(3) Exploring the use of advanced materials which will substitute for or displace the overall need for strategic materials. These include:

   (a) Composite materials of various kinds (e.g., metals, polymers or glasses reinforced with graphite, glass, ceramic and polyamide fibers)

   (b) Rapidly solidified metals

   (c) Structural ceramics (especially those "toughened" by internal discontinuities)

- (d) Intermetallic compounds (and alloys strengthened by intermetallic compounds)
- (e) Structural polymers
- (f) Coated-graphite and woven-graphite composites and laminates
- (g) Advanced coatings, ion implants, laminates, claddings, graded layers, or dual-composition concepts which reduce the total requirements for critical materials

B. Conservation

Some conservation options include:

- (1) Using computerized methods for product design as well as for control of manufacturing to minimize excessive use of strategic materials
- (2) Exploiting manufacturing techniques which produce parts to near-net shape, thereby reducing metal removal operations and scrap generation, such as:
  - (a) Investment and precision die casting
  - (b) Powder Metallurgy
  - (c) Precision stepped extrusions and forgings
  - (d) Improved welding and joining techniques
  - (e) Superplastic forming, isothermal and near-isothermal forging and hot-isostatic pressing.

C. Reclamation

Some reclamation options include:

- (1) Assessing current technology and devising procedures for rapid identification and sorting of scrap metals
- (2) Reclaiming mechanically-cleanable materials, such as shop floor scrap, grinding swarf, and chemical machining sludges
- (3) Identifying and tracking scrap through all stages of manufacture and collection to maintain pedigree, and
- (4) Developing advanced extractive technologies to minimize the buildup of deleterious trace elements in recycled scrap and for producing master melt alloys from contaminated wastes.

D. Life Extension

Finally, some life extension options include:

(1) Employing computer-aided design, manufacture and inspection techniques to improve structural integrity, reliability, and resistance to failure.

(2) Developing improved nondestructive evaluation, analytical, repair, maintenance, in-service monitoring and rework procedures to extend the life of existing structures and components containing strategic materials.

(3) Using improved coatings, alloys and microstructures to minimize wear, erosion and corrosion (e.g., through rapid solidification metallurgy)

In this latter category alone, the cost of corrosion, wear, fatigue, and the inefficient use of energy on the U.S. economy has been estimated at $200 billion annually. Strategic materials, especially chromium, play a critical role in keeping this cost as low as possible. For example, a reduction in the use of chromium in bridges, propulsion systems, heat engines, steam plants, petroleum production platforms and refineries and other such systems, would surely cause this cost to rise rapidly unless suitable substitute materials or protection methods were available and could be deployed.

Advanced surface modification technologies are playing an important role in not only reducing the strategic metal content in coatings applied for surface wear and corrosion protection but also for making possible a reduction in strategic material content in the underlying substrate material. These technologies include the following:

A. Reactive Chemical Vapor Deposition

B. Ion Implantation

C. Ion Nitriding (Glow Discharge)

D. Ion Plating

E. Reaction Magnetron Sputtering

F. Arc Coating

From the foregoing examples of technical strategies, TRW has discovered that there are clear and immediate actions that are driven by economic, defensive, and opportunistic incentives which do not need to await government action or policy intervention. By applying these technical strategies, we have already achieved some successes in reducing our dependence on strategic materials, and other developments are in the wings. Examples include the following: (1) advanced TiN coatings for industrial tools which extend tool life by factors of five to ten, (2) base metal coatings which replace platinum-group metals in hybrid circuits, (3) advanced coating techniques which minimize the use of noble metals in connector contacts, (4) advanced bearing alloys which extend bearing life under aggressive operating environments, and (5) cobalt-free alloy systems for the hard facings of engine exhaust valves.

Most of the strategies I have outlined address only one part of the materials cycle; namely, the materials use part of the cycle, which is of primary importance to TRW. Equally extensive outlines could be developed for other stages of the materials cycle to include extraction, benefication, primary processing, and secondary materials processing and utilization.

Secondary materials represent a major "short cut" through the materials cycle. The processing of secondary materials not only requires substantially less energy use than the processing of primary materials, but also results in less net waste to dispose of and fewer problems in environmental management. Moreover, a ton of secondary materials processing capacity, as in the case of a ton of domestic primary production capacity, can displace three tons of material from the Strategic Stockpile, based on a three-year stockpile objective.

## Closing Statement

In closing, while I have stressed the private sector responses to materials risk management, I do not propose that the private sector alone can solve our future materials requirements. The 33 recommendations made by The President's Transition Task Force on Strategic Minerals underscore that the problem of nonfuel minerals import dependence is a problem that is at once "domestic" and "international" as well as "economic", "political" and "military". A review of these recommendations will reveal that the problem is highly multifaceted,to include foreign relations, trade relations, capital investment, environmental policy, multiple-use of federal lands, research and development, stockpiling, information dissemination and many other aspects involving both government and business. It seems clear that any comprehensive policy seeking solutions to our long-term requirements for these materials will require cooperative efforts by both the public and private sectors.

The CHAIRMAN. Thank you very much, Mr. Harris.
Mr. Dunn.

## STATEMENT OF ROBERT G. DUNN, SENIOR VICE PRESIDENT, METALS GROUP, AMAX, INC.

Mr. DUNN. Thank you. My name is Robert Dunn. I am vice president, Metals Group, AMAX. I represent a large, diversified international minerals and metals company.

We welcome this opportunity to discuss with you our views on minerals policy. In particular, we would like to talk about geopolitical aspects of strategic minerals vulnerability.

We have submitted a written statement and refer you to that for details of our view. In the brief time this morning I would just like to describe some of the aspects of the prepared statement, cite some specific examples, and then focus on the principal conclusions of our statement.

We discussed vulnerability and vulnerability can be viewed from different aspects. The most common one is that of the consumer, but we would like to call attention to that of the producer, and this is oftentimes forgotten in determining minerals policy.

Another aspect of vulnerability is that of diversity of supply. This is an alternative to dependence and vulnerability and we would like to point this out as something to be considered in establishing minerals policy.

In the written statement we have detailed some of what we believe are basic precepts for minerals policy. These would be precepts as viewed from a minerals producer. We review two markets which have been affected by Government minerals policy, first that of tungsten and then of cobalt.

Tungsten is a market that the Government has made wide variations in stockpile policy and from one time to another was the largest single purchaser and then the largest single seller of tungsten. With its impact on the market, it has seriously affected the mineral production base.

In cobalt, we review the chronology of stockpile policy leading up to the cobalt market problems of 1978, 1979, and also discuss how changes in stockpile policy affected that market situation.

One point I would like to leave with you this morning is I believe there is a misconception about cobalt and that is the world, free world, and the United States are not totally reliant on southern Africa for cobalt supplies. In the written statement we summarize our estimate of cobalt reserves and resources.

Reviewing the numbers, approximately 65 percent of free world cobalt reserves and resources lie outside southern Africa. There is a considerable amount of cobalt that is associated with nickel laterites and sulphites, and this is material that is available for commercial and defense use.

The cobalt market is now one that can be stated as a condition of vulnerability but vulnerability to that of the producer. It is beset by excess inventories, declining demand, depressed prices, uneconomic conditions, a market that is in a state of disarray and few prospects for recovery in the near term or perhaps even the long term, and this is a point, that Government policy can affect producer vulnerability to economic problems which in the long run can undercut the minerals production base.

Another aspect about cobalt is that there is more than enough production of cobalt; something that oftentimes is forgotten is that not enough emphasis is placed on cobalt recovery. There is a considerable amount of cobalt that is mined that is not recovered. This would be from nickel laterites and also from lead/zinc ores produced in the United States.

My prepared statement also reviews some commercial alternatives to vulnerability and we believe these are oftentimes forgotten.

Now I would just like to go over the six principal conclusions that we have in our paper. They are, one, the minerals industry is international in character and operates most efficiently under free market conditions with a minimum of Government involvement.

Two, the Government has a preeminent responsibility in assuring an adequate supply of critical materials for national defense. Principal reliance should be placed on the strategic stockpile to insure against minerals vulnerability.

The Defense Production Act should be used selectively to subsidize economic or subeconomic, but not generally uneconomic projects.

Three, governmental actions have created more vulnerability than they have solved. Sudden shifts in goals and sales/purchase programs for the strategic stockpile have unfavorably disrupted mineral markets. The stockpile goals should be consistently determined, carefully monitored, and judiciously revised when long-term conditions dictate such action.

Four, Government strategic mineral policy actions should supplement rather than contravene normal market forces. Commercial alternatives to mineral vulnerability should be pursued whenever practicable.

Five, domestic mineral production is not the only nor always necessarily the best solution to potential vulnerability. Subsidization of uneconomic domestic projects can be disruptive to western world mineral markets. By emphasizing normal market forces and encouraging a diversification of economic supply sources, the Government could minimize vulnerability.

For example, the Government could make stockpile purchases from cobalt refineries that process nickel and cobalt residues.

Finally, six, much emphasis has been placed on developing minerals production to reduce geopolitical threats while sometimes neglecting mineral processing vulnerability.

As is the case with cobalt, increased attention to processing inadequacies could reduce concerns over vulnerability.

I would like to thank you very much for this opportunity to present our views, and I would be happy to answer any questions you may have.

[The prepared statement of Mr. Dunn follows:]

## STATEMENT OF ROBERT G. DUNN, SENIOR VICE PRESIDENT, METALS GROUP, AMAX INC.

### I. Introduction

Mr. Chairman, members of the Committee, I am Robert Dunn, Senior Vice President of the AMAX Metals Group. AMAX is one of the world's most diversified natural resources and mineral development companies. We explore for, mine, smelt, refine, and market a wide variety of minerals and metals and have substantial interests in coal, petroleum and natural gas. AMAX's principal products are molybdenum, iron ore, copper, lead, zinc, petroleum, natural gas, potash, phosphates, nickel, cobalt, tungsten, silver, gold, platinum group metals and magnesium. In addition, we are minor producers of cadmium, gadolinium and tin. Through Alumax Inc., a 50 percent-owned affiliate, AMAX is also involved in the production, fabrication, and marketing of aluminum and aluminum products. Our view of minerals policy is seen from an international standpoint, and you may find it does not generally conform with other mineral producers who regularly petition Congress.

The last decade has been a turbulent one for everyone involved in the minerals market--producers, consumers, and government--with the cyclical nature of supply and demand being exacerbated by concurrent disruptions in the world economy. This cyclicality has resulted in a variety of histories for individual materials, ranging from the development of a significant excess capacity in copper and nickel to an apparently critical shortage of cobalt in 1978. In addition, the rise of OPEC highlighted the consequences of dependence upon foreign sources of supply for critical materials and, in our view, engendered a xenophobic "shortage mentality" in which dependence has come to be equated with vulnerability. As an international company with domestic and foreign operations, AMAX considers such a view dangerous and counterproductive; we are therefore all the more grateful for the opportunity to present our views to the American Congress and hence, the American public.

Specifically, we have come to review geopolitical considerations and supply vulnerability of critical and strategic minerals. Examples of both government actions and industry reactions will be discussed using tungsten and cobalt as illustrative metal markets.

## II. Geopolitics and Vulnerability

While often directing attention to mineral production issues, the government has devoted little attention to the effect of government's strategic minerals policy on mineral producers. Instead, discussion has focused on government response to "resource wars" and "critical foreign dependence" on geopolitically insecure minerals. While we have no wish to downplay the importance of these issues and fully recognize the government's national defense responsibilities, we also believe that the government should fulfill its obligations in a manner which minimizes the disruption of freely operating markets. Although a considerable amount of effort has been spent examining problems caused by geopolitically-induced shortages, in actuality we have not experienced a mineral shortage purposefully initiated by a foreign government since WWII. In attempting to develop solutions to perceived crises, the government, at times, has created market situations which have produced results contrary to those originally intended: unstable markets, poor financial results for minerals producers, and a weaker industrial base.

Minerals vulnerability is commonly thought of as being at risk to supply disruptions. However, there are two sides to minerals vulnerability, namely that faced by the consumer and that by the producer. Government concerns are generally restricted to consumer vulnerability wherein a mineral supply limitation causes an abrupt and unexpected runup in price. Little attention is paid to producer vulnerability in which the minerals industry may be faced with prolonged periods of excess supply and uneconomic performance caused by short-term over-reaction. In its haste to preclude perceived consumer vulnerabilities, the government oftentimes unwittingly creates producer vulnerabilities, which can eventually lead to a loss of production capacity.

Although government is almost totally concerned with geopolitically-induced supply disruptions, such disruptions can also occur through natural acts and other events, such as strikes, accidents, and equipment breakdown. The minerals consuming industry generally insures against these disruptions by diversifying its sources of supply. The government should pay heed to this reliance on the diversity of the market when addressing geopolitical vulnerabilities. Domestic production is definitely not the only and not always necessarily the best solution to a political threat of mineral supply disruption. By using normal market forces and encouraging a diversification of economic supply sources the government need not resort to the subsidization of uneconomic domestic production. As is the case with cobalt, increased attention to processing inadequacies could reduce concerns over vulnerability.

## III. Mineral Industry Precepts

Before reviewing the tungsten and cobalt markets, it would be useful to enumerate some fundamentals of mineral supply and basic precepts for government actions:

1. All countries are not created equal. Minerals are distributed unevenly across the earth's surface in quantities and concentrations unrelated to the distribution of minerals demand. Economic mining generally occurs where the grade is the highest and the reserves the largest, and no amount of government subsidies can change grade and reserves.

2. Mining, therefore, is an international business. Of necessity, a variety of systems and companies have developed to extract and reallocate the earth's resources according to the distribution of demand.

3. The government has a preeminent responsibility to ensure the adequacy of critical and strategic minerals for national defense. We believe the stockpiling of defense materials is the best way to ensure availability, and that the stockpile should not be used to smooth out fluctuations in price caused by the vagaries of economic cycles, nor as a budget-balancing source of funds. We also believe that stockpile goals should be consistently determined, carefully monitored and judiciously revised when long-term conditions dictate such action. We therefore support S-1095, which proposes to establish a mechanism to improve stockpile goal-setting procedures.

4. The Defense Production Act is a necessary adjunct to a national strategic minerals policy. Government should consider alternative methods by which stockpile goals may be reached and the security of materials sources ensured. One such method is to contract for raw materials from a diversity of sources and to enhance domestic processing capabilities. The former will guard against the interruption of supplies from any one source, and the latter, while contributing to the process of filling the stockpile, will also provide an "insurance policy" in the event of a stockpile drawdown.

5. Government creates more mineral vulnerabilities than it solves. Tungsten and cobalt are not the only mineral markets that have been destabilized by government actions. Moreover, the theory of

government-induced vulnerabilities is corroborated by the 1976 report of The National Commission on Supplies and Shortages, wherein it was concluded that "a surprisingly high proportion of [short-run shocks exceeding the immediate adjustment capabilities of materials producing and consuming industries] is related, either directly or indirectly, to the actions of governments." The government's actions should supplement rather than contravene normal market forces.

6. The subsidization of uneconomic production capacity is generally harmful. By definition, an economic property is one which is able to operate profitably (i.e., cover all costs) at market prices. Therefore, a well-run stockpile program will be able to obtain adequate supplies at a cost to the taxpayer which is lower than that resulting from the purchase of material from an uneconomic source. Furthermore, the injection of excess capacity into a market only serves to harm the long-run profitability of existing producers.

We consider these precepts to be important not only to the nation's security but also to the future of its mining industry. The tungsten and cobalt industries provide examples of what has happened, and could happen, if improper decisions are made.

## IV. Tungsten Market Review

The tungsten example illustrates how efforts to mitigate a short-term vulnerability can create long-term problems for a mineral producer. During the Korean War, the U.S. government initiated a program for tungsten in order to expand the strategic stockpile. This action was taken in the light of interruption of supplies from Korea and China. Spurred by this artificial demand, U.S. mine production increased from 4 million pounds in 1950 to

16 million pounds in 1955, while prices rose from $27/stu (short ton unit) to $65/stu. The stockpile ultimately reached a level of more than 208 million pounds, compared to the average annual U.S. consumption of 10 million pounds and world consumption of slightly more than 30 million pounds. There stockpile goals were revised downward in the early 1960's to 51 million pounds. Throughout this period, however, producer inventories expanded because many mines which opened because of the government's program were slow in closing after purchases were terminated. As a result of this inventory buildup, prices fell from $65/stu to $8/stu.

The latter part of the 1960's saw rapid growth in tungsten demand to the level of 50 million pounds/year. During this period, the government established a "shelf price" of $43/stu which effectively put a ceiling on the market, retarding growth in prices and investment in mine capacity to meet the increased demand. Stockpile sales increased spectacularly and peaked at 29 million pounds in 1970, representing more than 50% of the world demand.

Eventually, the government acted to stabilize the sales program by establishing a sealed bid system and limiting the level of sales to a fixed maximum quantity during any given year. The current system still allows room for speculation, and hence market disruption, via the terms of sale, which just require a 10% deposit. Thus, a person expecting tungsten prices to rise during 1983 may take a position and, arrange for resale of the material some three months later at higher prices with only a small deposit.

It is our view that, by accumulating an excessive stockpile and allowing the material to reenter the market without regard for the potential consequences, the government was guilty of a disservice to taxpayers, who had to foot the bill for an expensive mistake, to producers, who had to endure abnormal price fluctuations and competition from an unlikely source, and ultimately to consumers, who until recently were served by an industry with an inadequate mine capacity. As we will see for cobalt, a similar stockpile policy produced more serious consequences and led to lasting misconceptions.

## V. Cobalt Market Review

The cobalt market provides an example of what can go wrong when a short-term problem is perceived as a long-term crisis. We feel the cobalt supply question receives far more attention than it deserves and, fueled by an irrational fear, has resulted in a plethora of extravagant solutions to a problem that doesn't exist. We would compare it to spending one's days looking skyward for fear of being hit by a meteorite, meanwhile oblivious to the fact that we're about to be run over by a bus. In other words, the problem changes significantly when viewed from a different perspective.

As with tungsten, cobalt illustrates the problems created when the government takes a position as a long-term supplier to consuming industries, Additionally, by suspending sales and revising goals as a precursor to a market disruption, the problem was exacerbated. Throughout the 1950's, the government's cobalt stockpile expanded tremendously, reaching a level of more than 100 million pounds at a point in time when the stockpile goal was being revised downward to 20 million pounds. Starting in the mid-1960's, cobalt was sold from the stockpile at an average rate of about 6 million pounds/year, compared to the annual U.S. consumption of 15-16 million pounds/year. As mentioned before, the early part of the 1970's saw shortages of a number of key materials and ultimately led to the upward revision of many stockpile goals. That for cobalt was revised from 12 to 85 million pounds in 1976, with sales being suspended in 1977.

The suspension of sales presented a major problem because the government's long term position as a supplier of 35% of the U.S. market was seen as a reliable source of supply by consumers and had retarded the rate of growth in world mine production capacity. The length of time between the revision of the stockpile goal and the suspension of sales was simply not long enough for producers to adjust. Furthermore, the invasion of Zaire's Shaba Province, which occurred soon thereafter, inspired a panic that saw manufacturers literally bid against their own alloy suppliers in an effort to guarantee cobalt requirements. Fanned by speculative fever and rumor, the merchant price peaked at $40 - 50/lb in late 1978 and early 1979.

In assessing market availability, it is known that refined production actually increased in the invasion year. Zaire's production increase amounted to some seven million pounds in 1978, while western world production increased by eight million pounds. Other than the emotional factor, the Shaba Province invasion had no impact on the cobalt shortage (a fact which the government was well aware of shortly after the invasion). We maintain that the abrupt cessation of U.S. government stockpile sales precipitated the cobalt shortage. Instead of a foreign conspiracy as claimed by many, we would describe the cause of the problem with a quote from Pogo: "We have met the enemy and he is us."

The last few years have seen the cobalt supply situation reverse from shortage to excess. Three basic factors have contributed to this reversal, one of which can be considered as an exogenous influence: the effect of a prolonged world economic recession on consumption levels. The other two, however, reflect the lasting damage which has been inflicted upon cobalt producers by an unnecessary crisis.

The combined effects of concern over assured availability and acceleration of prices prompted some consumers to reduce or eliminate the use of cobalt. Such efforts cannot be implemented immediately. Time is required to design, develop, test, and evaluate new materials for every component in every engineering application. This can be described as technological inertia and is a function of the component design cycle and the criticality of the application.

In the United States, cobalt consumption peaked in 1978 and has declined continuously from that time. While depressed economic conditons have contributed to the decline in demand, part of the decline is the result of material substitutions. Because of the technological inertia effect, the results of such substitutions have appeared long after the market crisis has abated. All in all, considerable technical effort has been directed toward the reduction or elimination of cobalt from material applications, but success of such efforts is not completely known. If, as expected, the western world economies turn up in 1983-84, cobalt consumption will continue to be depressed in some measure by the technological inertia of material substitution.

The third effect of the cobalt shortage affects adjustments made on the production side. With the exception of minor primary production from Morocco, all cobalt is mined as a byproduct of other metal mining operations. Copper and nickel are the two principal mine sources. Prior to 1977 many nickel mines found it uneconomical to recover cobalt. The sudden runup in the price of cobalt, however, caused many producers to make capital investments to initiate or improve the recovery of cobalt. Wherever possible, mine operators also highgraded to increase cobalt production. Consequently, cobalt production increased 58% over the 1977-1980 period, and plans were developed to increase production into the mid-1980's. Undoubtedly, many of these projects will be cut back or postponed.

Because of its byproduct nature, cobalt production is markedly influenced by market economics for copper and nickel. In addition, capital investments made to increase byproduct recovery are treated as a sunk cost and cobalt circuits will continue to operate as long as incremental costs are less than or equal to market prices. As such, cobalt production continued to increase despite declining demands. Cobalt production did decline in 1981-82, principally as a result of recessionary effects on the copper and nickel markets. Although production was reduced over the past two years, the rate of reduction was much less than the drop in demand, resulting in an ever-increasing level of producer cobalt inventories. At the present time, accumulated inventories account for 2-3 years of market demand. Such a large inventory overhang is an extreme depressant to market pricing. From peak merchant prices of $50 per pound in 1978-79, the market slumped to as low as $4 per pound in 1982.

## VI. Commercial Alternatives to Vulnerability

Government working in cooperation with the minerals industry can utilize commercial initiatives to minimize vulnerablities. Recognizing that strategic materials vulnerability is almost exclusively dealt with in perception and almost never in reality, it is difficult to develop specific alternatives to perceived and generalized problems. In illustration, however, it is possible to discuss commercial cobalt alternatives to deal with both past and anticipated market situations. Such examples demonstrate the role that government could assume to supplement the minerals industry in minimizing vulnerabilities.

During the recent cobalt crisis I proposed a commercial alternative to government which could have alleviated the problem and upgraded the strategic stockpile. The strategic stockpile contains an extensive amount of inferior quality cobalt which is inapplicable for defense purposes. It was suggested that off-specification material be loaned to the two principal producers of cobalt. The low quality material could be used for many non-critical applications and would supplant high quality cobalt for such uses. Within three years, the two producers would repay the cobalt plus interest (also in the form of cobalt) and all material would meet stockpile specifications. It is believed that this proposal, if implemented, would have broken the back of the crisis and concomitantly increased and upgraded the strategic stockpile. In the absence of empowering legislation the government did not consider this suggestion.

In view of the large inventory currently overhanging the cobalt market, the U.S. government has an ideal opportunity to make a thorough, reasoned and careful assessment of the world cobalt market and the various supply options available. In particular, one misconception concerning the geographical distribution of world reserves must be dispelled, namely the idea that the world is inescapably dependent upon politically insecure African nations for supply. In the attached exhibit, we have detailed the major known free world reserves of cobalt. It is apparent from this table that Zaire and Zambia are not the only potential sources of cobalt; they do possess the largest economic reserves at today's prices, but their combined share of the known free world reserves amounts to less than 35% of the total.

A considerable amount of cobalt contained in nickel oxide ore is unrecovered. Government efforts could be directed toward providing incentives for laterites to be processed by refineries that recover cobalt rather than smelted to ferronickel.

A further subject for government study should be the various alternatives available for cobalt production under the Defense Production Act. While we believe that a well-managed stockpile should be the primary element of any program, it is also important to recognize various processing alternatives as a supplement to the stockpile. By upgrading domestic processing capability, and by contracting for a diversity of supplies in much the same way that Japanese industry does, the U.S. government could augment the stockpile replenishment program, dispel any fear about vulnerability arising from dependence upon a limited number of suppliers, and ensure a domestic capability to process a variety of feeds from diverse sources.

## VII. Conclusions

1. The minerals industry is international in character and operates most efficiently under free market conditions with a minimum of government involvement.
2. The government has a preeminent responsibility in assuring an adequate supply of critical minerals for national defense. Principal reliance should be placed on the strategic stockpile to insure against minerals vulnerability. The Defense Production Act should be used selectively to subsidize economic or subeconomic but generally not uneconomic projects.

3. Governmental actions have created more vulnerabilities than they have solved. Sudden shifts in goals and sales/purchase programs for the strategic stockpile have unfavorably disrupted mineral markets. The stockpile goals should be consistently determined, carefully monitored and judiciously revised when long-term conditions dictate such action.
4. Government strategic mineral policy actions should supplement rather than contravene normal market forces. Commercial alternatives to mineral vulnerability should be pursued wherever practicable.
5. Domestic mineral production is not the only nor always necessarily the best solution to potential vulnerabilities. Subsidization of uneconomic domestic projects can be disruptive to western-world mineral markets. By emphasizing normal market forces and encouraging a diversification of economic supply sources, the government could minimize vulnerability. For example, the government could make stockpile purchases from cobalt refineries that process nickel matte and cobalt residues.
6. Much emphasis has been placed on developing minerals production to reduce geopolitical threats while sometimes neglecting mineral processing vulnerabilities. As is the case with cobalt, increased attention to processing inadequacies could reduce concerns over vulnerability.

## ESTIMATED WORLD COBALT RESERVES

| Oxide Ores of Nickel | Ores Reserves (Million Tons) | Grade (%) | Cobalt Contained (Thousand Tons) |
|---|---|---|---|
| Australia | 31 | 0.11 | 34.5 |
| Indonesia | | | |
| Soroako | 209 | 0.01 | 27.0 |
| P.T. Aneka Tambang | 33 | 0.02 | 10.0 |
| Gag Island | 317 | 0.09 | 290.0 |
| Other | 200 | 0.09 | 180.0 |
| Philippines | | | |
| Marinduque | 175 | 0.11 | 192.0 |
| Other | 140 | 0.11 | 150.0 |
| New Caledonia | | | |
| SLN | 236 | 0.07 | 170.0 |
| Goro | 126 | 0.13 | 160.0 |
| Prony | 400 | 0.02 | 80.0 |
| Tiebaghi | 125 | 0.10 | 130.0 |
| Guatemala | 58 | 0.03 | 17.0 |
| Dominican Republic | 50 | 0.05 | 25.0 |
| Cuba | 800 | 0.10 | 800.0 |
| USA (Hanna) | 31 | 0.02 | 6.0 |
| USA (Ni-Cal) | 16 | 0.07 | 12.0 |
| Colombia | 23 | 0.05 | 12.0 |
| Greece | 264 | 0.07 | 200.0 |
| Subtotal | | | 2,500.0 |
| Sulfide Ores of Nickel | | | |
| Australia | 480 | 0.02 | 100.0 |
| Botswana | 38 | 0.06 | 20.0 |
| Canada | 580 | 0.02 | 150.0 |
| Subtotal | | | 270.0 |
| Sulfide Ores of Copper | | | |
| Zaire | | | 680.0 |
| Zambia | | | 350.0 |
| Subtotal | | | 1,030.0 |
| Sulfide Ores of Lead | | | |
| USA (Missouri) | 380 | 0.02 | 75.0 |
| Iron Ore | | | |
| Peru | | | 40.0 |
| Primary | | | |
| Morocco | 0.3 | 1.00 | 3.0 |
| USA (Idaho/Missouri) | 15 | 0.40 | 60.0 |
| Subtotal | | | 63.0 |
| Total | | | 3,978.0 |

The CHAIRMAN. Thank you very much, Mr. Dunn.
Mr. Barber.

## STATEMENT OF CHARLES F. BARBER, CHAIRMAN, FINANCE COMMITTEE, ASARCO, INC.

Mr. BARBER. My name is Charles F. Barber. I am a Director and former Chairman of ASARCO, Inc., a producer of non-ferrous metals.

From 1980 to 1983 I also served as Chairman of the American Mining Congress. For many years I have urged that a healthy domestic mining and mineral processing industry is by far the most important element in a metals and minerals policy designed to serve the Nation's needs.

We meet at a time when the outlook for the domestic mining industry is not encouraging. In addition to dealing with the severe recession and the common woes resulting from the worldwide drop in demand for metals, U.S. producers have had to live with the consequences of the strong U.S. dollar and the special problems with respect to excess supply resulting from the production decisions of the mining companies owned by foreign governments. So long as these conditions continue to prevail, the outlook for the domestic mining industry will remain grim.

In my formal statement I review the economic setting. We all know that last year was one of the worst years we have had to deal with since the depths of the depression. Now things are a little better with prices above their recent lows, so we have something of a breathing space.

It is a good time to look at the big picture, and that is what I propose to do today. The last 2 years have provided a fascinating insight into the process of adjustment within the private sector when demand for metals drops, prices fall, and corporate survival becomes a primary objective of management.

In the annual report for 1982, the major nonferrous metals companies report the steps taken to become and remain competitive under the conditions of reduced demand, and I should add just to survive as corporations. These adjustments have been substantial—cutting costs, reducing staff, elimination of nonessential expenditures, tightening of operations controls, and in the case of marginal, unprofitable property, admitting failure and shutting them down to stem continuing losses.

Also the major producers curtailed output to conserve reserves and limit accumulation of stocks. In the United States alone, these last actions resulted in a reduction of mine production of copper of about 25 percent in 1982 from the 1981 level. In April of this year, more than 17,500 men and women were on layoff in the copper industry alone. The annual reports also report a deferral or stretch-out of expansion plans, sale of assets not essential to the core of businesses, and other steps taken or planned to reduce debt, increase equity, or both.

Looking ahead, the reports reveal a new focus on smaller properties and incremental expansions, and in some cases, a redirection of exploration toward precious and minor metals. They promise a leaner organization, well positioned to participate fully in the recovery when it comes. This is the adjustment process which assures survival in a heavily cyclical industry.

In contrast, I have searched and failed to find evidence that the public sector mining companies operated by governments have made any significant response to the economic imperatives of the recent past. They have continued to operate the losers, financing them out of public revenues or by additional borrowing. They have responded to lower prices by increasing where, possible, units of production. An increase in production can be self-defeating, for it wastes valuable ore reserves which might better be conserved and stored in the ground and puts additional pressure on price.

Also a number of the public sector companies have continued to seek financing for new projects which are marginal at best and for which there can be no present economic justification if evaluated against what most of us would consider the appropriate engineering and market criteria for economic viability, looking ahead say 10 years.

The irony of this record is that to a considerable extent, this lack of response on the part of the Government-held companies has been made possible if not encouraged by support mechanisms that governments of the industrialized countries, including the United States, put in place in an effort to aid and assist the developing countries to improve their lot.

One example will suffice. In 1982, Codelco, a Chilean government company and the largest copper producer in the world, increased production by more than 15 percent or 139,000 metric tons to a level well above the previous peak in 1979. Then early this year Chile went to the IMF and arranged a loan under the compensatory financing facility in the amount of $327 million. That is at the January SDR rate—to compensate it for loss of revenue because of the low price of copper and its byproducts; that is equal in value to 221,000 metric tons of copper at the 1982 average LME price.

If Codelco had more sensitively adjusted its production policy to the needs of the market or if its eligibility for an IMF credit had depended on a responsive business plan, just think of the losses that would have been avoided not only for Chile but for all other producers of copper as well, among them some of the most needy LDC's.

Instead the IMF was called on to bail out the others, too. Zambia, Peru, Zaire, and Papua New Guineà, all major producers of copper, together have drawn $586 million under the IMF compensatory financing facility, their right to do so being based primarily on the low price of copper and the byproduct to which their own production decisions have significantly contributed.

In the case of Chile, the managers of Codelco, Chile's copper company, explained their production decisions on the grounds that operations were profitable, but during the period Chile was steadily devaluing the peso, thus reducing, in the short run, the cost of production of copper in dollar terms at the expense of the purchasing power of the peso to all the people of Chile. The Mining Journal of London reported that Codelco valued its gains from devaluation in 1982 at 220 million U.S. dollars. It reported net profits for the year of $160 million. Was Codelco profitable in real terms? That suggestion is subject to a good deal of discussion.

Zambia and Zaire copper producers sustained heavy losses during the year, notwithstanding substantial devaluations of their local currency. The performance of the public sector companies may also be questioned when one examines decisions relating to the continued operation of uneconomic properties and development of new mines and metallurgical plants.

Under existing practice, mines and metallurgical plants in developing countries which have no present economic justification are likely to continue to be operated at a loss as long as financing can be found. Until recently these facilities have been shielded from the adjustment process by the availability of subsidies and debt finance. This capital is wasted and a dead weight in the debt workouts these countries are now so painfully undergoing.

For example, a smelter and state-of-the-art lead/silver refinery is in the final stages of construction at Potosi, Bolivia. It is reported to cost $180 to $200 million, a figure far above the cost of a comparable plant elsewhere in the world. It is designed to smelt 51,000 metric tons per year of complex lead concentrates of which perhaps only 20,000 tons are available in Bolivia. It will provide not more than 200 jobs. This is an investment of $1 million per job in one of the world's poorest countries for a high-cost facility with no assured supply of raw materials.

Financing for the Bolivian plant was provided principally through the foreign aid and export credit facilities of two European governments whose nationals supplied the machinery and construction services. The debt, some of it extended at highly concessionary terms of 2 percent for 20 years, will have to be repaid. The plant will prove to be another heavy burden on this desperately poor country.

I have a few concluding comments and observations. The adjustment process we have observed in the private sector portion of the metals industry is part of the genius of our productivity. The experience of the last 20 months has reminded us once again of the importance of the engineering and management disciplines in a healthy competitive industry.

Our justified desire to help the poor nations is no excuse for failure to bring to their attention the importance of these same disciplines. Political responses to market imperatives are seldom in the long-run interests of anyone. This is particularly evident in the nonferrous metals industry where delays in responding to changes in the level of demand may increase the burden on all participants in the industry, developed and developing countries alike.

Mines and metallurgical plants should be built only where they have engineering, financial, and market criteria of the sort applied in the private sector. Over the past decade, commercial banks and government export credit and guarantee agencies have tended to substitute government risk for credit-risk criteria in lending to developing countries. This has tended to displace private equity capital which might otherwise have come forward and to encourage the development of properties on other than economic grounds.

The current LDC debt prices should heighten the sensitivity of these banks, and agencies to the importance of encouraging the investment of private equity capital in mine and metallurgical plant development and of insisting on the application of traditional credit criteria in considering loans for project development. Such criteria should invariably include consideration of the timing of development of a project which will result in a significant increment in supply and the effect of excess capacity on all other producers.

The current LDC debt crisis has led to proposals to increase the lending facilities of the IMF and the World Bank. The proposed increase for the IMF alone is $43.3 billion. Such an increase will enhance the capacity of the IMF to assist debtor countries on a case-by-case basis with additional loans and guidance to make the internal adjustments required to work out from under excessive debt. I believe that it is in the interest of all that this should be done.

It is a good time when the conditions of such additional finance are being discussed to make the point that mines and metallurgical plants cannot be regarded as public works projects. No one project stands alone. Each such project must be evaluated and the costs of premature development in the context—let me back up. Each such project must be evaluated in terms of its probable economic yield and the costs of premature development in the context of the world market in which it is a part and to which its output will provide additional supply. I note that the Senate bill authorizing the additional U.S. contribution to the IMF which was passed last week included some admonitory language to this effect.

The private international banks, experience indicates, are seldom inclined to attempt to discipline a sovereign state creditor, whatever the underlying loan agreement may stipulate. This places a heavy burden on the multinational financial institutions. In the current debt crisis, the IMF has stepped up to the need for reevaluation of the ongoing public sector mineral development projects. For example, within recent months, construction of the Carajas iron ore project in Brazil has been stretched out 1 year and the project expenditure for 1983 reduced from $1 billion to $500 million.

Also a major expansion of the Cananea copper mine in northern Mexico for which the International Finance Corp. financing had previously been approved appears to have been deferred. The company sponsoring each of these projects formerly had private sector partners. However, the latter deemed the project untimely or technically unsound, or both. Each sold or transferred its interest to the public sector majority owner when the host government insisted on proceeding with development.

The sixth session of the UN Conference on Trade and Development is meeting in Belgrade, Yugoslavia, this month. The developing nations are again pressing the industrialized countries for acceptance of measures to stabilize and strengthen commodity markets, the common fund, additional international commodity agreements, increases of funding for the IMF's compensatory financing facility, and the buffer stock financing facility and the like.

The questions I have raised should be asked in this connection. It is self-defeating for the industrial countries and the international agencies to go along with measures which in practice accommodate failure on the part of the LDC's to respond to market realities. As the editor of the Mining Journal of London has written, support for massive stockpile arrangements unsupported by production controls is at best misguided and at worst consciously mischievous.

As an American conscious of the importance of the North American mining industry to the defense of the free world, I would add that going along with such measures would impair the future of a significant portion of the private sector mining and metallurgical industry as well.

Experience suggests that effective production controls for the major metals—by "major metals" I am talking about copper, lead, zinc—are unlikely to be seen, or if attempted, to insure for very long.

Moreover, if public sector producers dealing with uneconomic mines and metallurgical plants as if they were public works projects or if the largest and strongest producers of any metal ignore market realities, they are insuring a prolongation of market imbalance and loss of revenues for themselves and all other producers. In such circumstances, access to additional financing from any source should be subject to a new form of what IMF calls conditionality. Each situation should be examined on its own merits and dealt with accordingly.

I am convinced that compensatory financing can be used so as to relieve the market of the price-depressing effects of production for which there is no present industrial demand, instead of encouraging production of such excess supplies. For example, the compensatory financing facility of the IMF or some new agency could be authorized to enter into ad hoc agreements with copper-producing countries to guarantee a stipulated level of revenues for the export of copper during a limited period, say 6 months or 1 year, and condition that production of copper during that period not exceed a prescribed level. The agreements would be designed on a case-by-case basis as in the case of balance-of-payments financing with no requirement of uniformity. Such a loan can be repaid out of a proportion of revenues when revenues and price exceed designated levels.

I make the above suggestion in the hope of encouraging active consideration of the issue. Public sector companies are not subject to the harsh discipline of the balance sheet. Surely under the illuminating economic stress of the times our institutions are sufficiently innovative to create and to implement procedures which accomplish a comparable result.

The alternative in the case of mineral commodities is a waste of reserves of important nonrenewable resources and starvation of enterprises, including the domestic mining companies which in the longer term are essential to the defense of the free world and the material support of civilization as we know it.

We who are survivors in the private sector portion of the minerals industry have had to return to basics. In the period of reduced growth and demand for the major metals that appears to lie ahead, we will have to rely more on equity and be very certain of our timing with respect to the larger commitments. The successful companies are likely to be those which retain flexibility to adapt to continuing rapid change in expectations. Our professional engineering, financial and market evaluations will be of even greater importance than at any time during the period since World War II. In the decade ahead, steady growth in demand for our products and dollar inflation are not likely to cover up or excuse our mistakes to the extent they have over the last 20 years.

What should the U.S. Government do to assure a healthy domestic industry? In my judgment, the overall, overriding priority at this time continues to be a substantial reduction in the projected budget deficits. So long as the industry has to live with high real interest rates and the consequent excessively strong dollar, the domestic mining industry and more generally a substantial share of U.S. basic industry will continue in the present survival mode and the position of our customers vis-a-vis their foreign competitors will be heavily impaired.

In the meantime, the issues relating to the use of compensatory financing by the IMF and the criteria for the financing of additional production capacity in developing countries should be studied so that the unhealthy practices of the past decade will be avoided in the years ahead. In the longer run, it is the revival of economic growth in the world as a whole that will provide remunerative markets for the products of the mining industry, including our domestic mining industry.

The challenge of the domestic nonferrous metals industry is to survive until that happier day.

Thank you, Mr. Chairman. It has been a pleasure to be here with you once again.

[The prepared statement of Mr. Barber follows:]

Statement of
Charles F. Barber
Chairman of the Finance Committee
ASARCO Incorporated
before the Senate Committee on
Energy and Natural Resources
June 20, 1983

My name is Charles F. Barber. I am a director and former chairman of ASARCO Incorporated, a producer of nonferrous metals. From 1980 - 1983, I also served as chairman of the American Mining Congress. I am here today in response to an invitation to testify from the Chairman of the Committee.

For many years, I have urged that a healthy domestic mining and mineral processing industry is by far the most important element in a metals and materials policy designed to serve the nation's needs. We meet at a time when the outlook for the domestic mining industry is not encouraging. In addition to dealing with the severe recession and the common woes resulting from the worldwide drop in demand for metals, U. S. producers have had to live with the consequences of the strong U. S. dollar and the special problems with respect to excess supply resulting from the production decisions of the government-owned mining companies. So long as these conditions continue to prevail, the outlook for the domestic mining industry will remain grim.

I hope my statement this morning will contribute to a greater understanding of the international forces which underlie the foregoing. We can no longer treat domestic fiscal and monetary policy or even domestic unemployment policy as subjects separate from issues of international monetary and trade policy.

First, a few words about the economic setting and the response of the private sector companies.

For the nonferrous metals industry, the period from the last quarter of 1981 to the first months of 1983 were without question the most difficult of times since the worst of the depression years. Prices for copper, lead and zinc were at levels below the costs of production for most of the Free World's mines. Prices for such metals as aluminum, nickel and molybdenum, which in previous recessions had resisted sharp declines, were similarly affected. This reflected not only the severity and duration of the reduction in consumer demand, but also the entry of new non-integrated and public sector producers who freely offered excess production, for which there was no consumer demand, in the terminal and dealer markets. All of these metals saw record low prices during 1982 or in the first weeks of 1983; as to copper and lead, the prices in real terms were at levels not seen since 1933.

Now in June 1983, conditions are a bit better. Inflation and interest rates are significantly lower, the leading indicators are rising in the major industrial countries and promise a resumption, albeit restrained, of economic growth. The prices of the major metals, except for lead, while still unremunerative for a large share of the world's production, are above their recent lows. The prices of gold and silver are again attractive to the mining industry in most parts of the world where precious metals are found. We have a breathing space. It is a good time to look at the big picture. That is what I propose to do.

The last two years have provided a fascinating insight into the process of adjustment within the private sector when demand for metals drops, prices fall, and corporate survival becomes a primary objective of management.

The annual reports for 1982 of the major nonferrous metals companies all report the steps taken to become and remain competitive under the conditions of reduced demand. The adjustments have been substantial--cutting costs, reducing staff, elimination of non-essential expenditures, a tightening of operations controls, and in the case of marginal and unprofitable properties, admitting failure and shutting them down to stem continuing losses. Also the major producers curtailed output to conserve reserves and limit accumulation of stocks. In the United States alone these last actions resulted in a reduction of mine production of copper of about 25% from the 1981 level. In April of this year, more than 17,500 men and women were on layoff in the copper industry alone.

The annual reports also report deferral of or stretch out of expansion plans, sale of assets not essential to the core business and other steps taken or planned to reduce debt, increase equity or both. Looking ahead the reports reveal a new focus on smaller properties and incremental expansions and, in some cases, a redirection of exploration towards precious and minor metals. They promise a leaner organization, well positioned to participate fully in the recovery when it comes. This is the adjustment process which assures survival in a cyclical industry.

In contrast, I have searched and failed to find evidence that public sector mining companies have made a significant response to the economic imperatives of the recent past.

The public sector companies have continued to operate the losers, financing them out of the public revenues or by additional borrowing. They have responded to lower prices by increasing, where possible, units of production. An increase in production is self-defeating for it wastes valuable ore reserves which might better be conserved and stored in the ground, and puts additional pressure on price. Also a number of the public sector companies have continued to seek financing for new projects which are marginal at best and for which there can be no present economic justification if evaluated against what most of us would consider the appropriate engineering and market criteria for economic viability.

The irony of this record is that to a considerable extent this lack of response on the part of government owned companies has been made possible, if not encouraged, by support mechanisms that governments of the industrialized countries, including the United States, put in place in an effort to aid and assist the developing countries to improve their lot.

One example will suffice. In 1982 Codelco, the Chilean government company and the largest copper producer in the world, increased production by more than 15%, or 139,000 metric tons, to a level well above the previous peak in 1979. Then Chile went to the IMF and arranged a loan under the Compensatory Financing Facility in the amount of $327 million to compensate it for loss of revenues because of the low price of copper. That is equal to the value of 221,000 metric tons of copper at the 1982 average LME price.

If Codelco had more sensitively adjusted its production policy to the needs of the market, or if its eligibility for an IMF credit had depended on a responsive business plan, just think of the losses that would have been avoided not only for Chile but for all other producers of copper as well, among them some of the most needy LDC's.

Instead, the IMF was called on to bail out the others too. Zambia, Peru, Zaire and Papua New Guinea (Bougainville) together have drawn $586 million under the IMF's Compensatory Financing Facility, their right to do so being based primarily on the low price of copper and its by-products to which their own production decisions have significantly contributed.

In the case of Chile, the managers of Codelco, Chile's copper company, explained their production decisions on the ground that operations were profitable. But during the period, Chile was steadily devaluing the peso thus reducing (in the short run) the costs of production of copper in dollar terms at the expense of the purchasing power of the peso to all the people of Chile. The Mining Journal of London reported that Codelco valued its gains from devaluation in 1982 at U. S. $220 million. Codelco reported net profits for the year of $160.6 million. Was Codelco profitable in real terms? That suggestion is subject to a good deal of argument. Zambia and Zaire's copper producers sustained heavy losses during the year, notwithstanding substantial devaluations of their local currencies.

The performance of the public sector companies may also be questioned when one examines decisions relating to the continued operation of uneconomic properties and development of new mines and metallurgical plants.

Under existing practice, mines and metallurgical plants in developing countries which have no present economic justification are likely to continue to be operated at a loss as long as financing can be found. Until recently these facilities have been shielded from the adjustment process by the availability of subsidies and debt finance. This capital is wasted and a dead weight in the debt workouts these same countries are now so painfully undergoing.

For example, a smelter and state-of-the-art lead - silver refinery is in the final stages of construction at Potosi, Bolivia. It is reported to cost $180 to $200 million, a figure far above the cost of a comparable plant elsewhere in the world. It is designed to smelt

51,500 metric tons per year of complex lead concentrates, of which perhaps only 20,000 tons are available in Bolivia. It will provide not more than 200 jobs. That is an investment of $1,000,000 per job in one of the world's poorest countries for a high-cost facility with no assured supply of raw materials.

Financing for the Bolivian plant was provided principally through the foreign aid and export credit facilities of two European governments whose nationals supplied the machinery and construction services. The debt, some of it extended at 2% for 20 years, will have to be repaid. The plant will prove to be another heavy burden on this desperately poor country.

I have a few concluding comments:

1. The adjustment process we have observed in the private sector portion of the metals industry is part of the genius of our productivity. The experience of the last 20 months has reminded us once again of the importance of the engineering and management disciplines in a healthy, competitive industry.

2. Our justified desire to help the poor nations is no excuse for failure to bring to their attention the importance of engineering, market and management disciplines. Political responses to market imperatives are seldom in the long-run interests of any one. This is particularly evident in the

nonferrous metals industry where delays in responding to changes in the level of demand may increase the burden on all participants in the industry, developed and developing countries alike.

3. Mines and metallurgical plants should be built only when they meet engineering, financial and market criteria of the sort applied in the private sector. Over the past decade, commercial banks and government export-credit loan and guarantee agencies have tended to substitute sovereign risk for credit risk criteria in lending to developing countries. This has tended to displace private equity capital which might otherwise have come forward and to encourage the development of properties on other than economic grounds. The current LDC debt crises should heighten the sensitivity of these banks and agencies to the importance of encouraging the investment of private equity capital in mine and metallurgical plant development and of insisting on the application of traditional credit criteria in considering loans for project development. Such criteria should invariably include consideration of the timing of development of a project which will result in a significant increment in supply and the effect of excess equipped capacity on the borrower and on all other producers.

4. The current LDC debt crisis has led to proposals to increase the lending facilities of the IMF and the World Bank. The proposed increase for the IMF alone is $43.3 billion. Such an increase will enhance the capacity of the IMF to assist debtor countries on a case-by-case basis with additional loans and guidance to make the internal adjustments required to work out from under excessive debt. I believe that it is in the interests of all that this should be done. It is also a good time, when the conditions of such additional finance are being discussed, to make the point that mines and metallurgical plants cannot be regarded as public works projects. No one project stands alone. Each such project must be evaluated in terms of its probable economic yield and the costs of premature development in the context of the world market of which it is a part and to which its output will provide additional supply. I note that the Senate bill authorizing the additional U. S. contribution to the IMF included some admonitory language to this effect.

5. The private international banks, experience indicates, are seldom inclined to attempt to discipline a sovereign state creditor, whatever the underlying loan agreement may stipulate. This places a heavy burden

on the multinational financial institutions. In the current debt crisis, the IMF has stepped up to the need for re-evaluation of ongoing public sector mineral development projects. For example, within recent months, construction of the Carajas iron ore project in Brazil has been stretched out one year and the projected expenditure for 1983 reduced from $1 billion to $500 million. Also, a major expansion of the Cananea copper mine in northern Mexico, for which International Finance Corporation (World Bank) financing had previously been approved, appears to have been deferred. The companies sponsoring each of these projects formerly had private sector partners. However, the latter deemed the projects untimely or technically unsound or both. Each sold its interest to the public sector majority owner when the host government insisted on proceeding with development.

6. The sixth session of the U. N. Conference on Trade and Development (UNCTAD) is meeting in Belgrade this month. The developing nations are again pressing the industrialized countries for acceptance of measures

to stabilize and strengthen commodity markets - the common fund, additional international commodity agreements, increases of funding for the IMF's Compensatory Financing Facility and Buffer Stock Financing Facility, and the like. The questions I have raised should be asked in this connection. It is self-defeating for the industrial countries and the international agencies to go along with measures which in practice accommodate failure on the part of the LDC's to respond to market realities. As the editor of the Mining Journal of London has written "support for massive stockpile arrangements unsupported by production controls is at best misguided and, at worst, consciously mischievous."* As an American, conscious of the importance of the North American mining industry to the defense of the Free World, I would add that going along with such measures would impair the future of a significant portion of the private sector mining and metallurgical industry as well.

7. Experience suggests that effective production controls for the major metals are unlikely to be seen, or if attempted, to endure for very long. Moreover, if public sector producers

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*West, Michael, "Economics, Politics - and Engineering", Presidential Address, The Institution of Mining and Metallurgy Johannesburg, 3 June 1982.

deal with uneconomic mines and metallurgical plants as if they were public works projects, or if the largest and strongest producers of any metal ignore market realities, they are ensuring a prolongation of market imbalance and loss of revenues for themselves and all other producers. In such circumstances, access to additional financing from any source should be subject to a new form of what the IMF calls "conditionality". Questions like those I have raised can then be asked. Each situation should be examined on its own merits and dealt with accordingly.

8. I am convinced that compensatory financing can be used so as to relieve the market of the price-depressing effects of production for which there is no present industrial demand instead of encouraging the production of such excess supplies. For example, the Compensatory Financing Facility of the IMF could be authorized to enter into ad hoc agreements with copper producing countries to guarantee a stipulated level of revenues from the export of copper during a limited period, say six months or one year, on condition that production of copper during that period not exceed a prescribed level. The agreements would be designed on a case by case basis, as in the case of balance of payments loans, with no requirement of uniformity.

Such a loan could be repaid out of a proportion of revenues when revenues and price exceed designated levels.

I make the above specific suggestion in the hope of encouraging active consideration of the issue. Public sector companies are not subject to the harsh discipline of the balance sheet. Surely under the illuminating economic stress of the times, our institutions are sufficiently innovative to create and to implement procedures which accomplish a comparable result. The alternative in the case of mineral commodities is waste of reserves of important nonrenewable resources and starvation of enterprises, including the domestic mining companies, which in the longer term are essential to the defense of the Free World and the material support of civilization as we know it.

9. We who are survivors in the private sector portion of the minerals industry have had to return to the basics. In the period of reduced growth in demand for the major metals that appears to lie ahead, we will have to rely more on equity and be very certain of our timing with respect to the larger commitments. The successful companies are likely to be those which

retain flexibility to adapt to continuing rapid change in expectations. Our professional engineering, financial and market evaluations will be of even greater importance than at any time during the period since World War II. In the decade ahead, steady growth in demand for our products and dollar inflation are not likely to cover up or excuse our mistakes to the extent they have over the past 20 years.

10. What should the U. S. government do to assure a healthy domestic mining industry? In my judgment, the overriding priority at this time continues to be a substantial reduction of the projected budget deficits. So long as the industry has to live with high real interest rates and the consequent excessively strong dollar, the domestic mining industry and more generally, a substantial share of U. S. basic industry, will continue in the present survival mode and the position of our customers, vis-a-vis their foreign competitors, will be heavily impaired. In the meantime, the issues relating to the use of compensatory financing by the IMF and the criteria for the financing of additional production capacity in developing countries should be studied so that the unhealthy practices of the past decade will be avoided in the years ahead.

In the longer run, it is the revival of economic growth in the World as a whole that will provide remunerative markets for the products of the mining industry, including the domestic mining industry. The challenge of the domestic nonferrous metals industry is to survive until that happier day.

The CHAIRMAN. Thank you very much. I want to thank all three of you for thoughtful additions to the record, the questions that we must address ourselves to and hopefully toward some solutions.

Last year GAO released its report that Federal encouragement of mining investment in developing countries for strategic and critical minerals has only been marginally successful. In effect, it said we are not doing enough bilaterally or through multilateral lending groups.

Do you gentlemen agree that we are not doing enough?

Mr. DUNN. With any particular minerals? I am not familiar with the GAO report.

Mr. BARBER. Manganese, platinum.

The CHAIRMAN. Mr. Harris?

Mr. HARRIS. I think this is one that a mining producer should address.

Mr. BARBER. I will respond to that. Two years ago when this study was made that was a very much more important subject than I believe it is today.

At that time when I appeared before this committee I expressed a concern that we, all of us in the industry, share, that we were going into a period of very serious shortages of the major metals, including the strategic and critical materials in the 1980's. At that time we were expecting not a continuation of the growth which we had experienced during the post-war period 1948 to 1974, but maybe half that amount. In the case of copper maybe that would be a 2-percent growth; in the case of zinc, somewhat higher.

Since the middle of last year, and really precipitated by the collapse of Mexico and the realization that the world has gotten to a consumption level so we are not prepared to finance the development of that part of the world not yet industrialized, we have had to make a major reevaluation of the outlook for the 1980's. It is my view that over the next, we can see pretty clearly out 5 or 6 years, the world outside the industrialized countries are going to be struggling getting their national balance sheets in order, finding a way to handle this debt.

That means that this area to which we have looked for above average growth in consumption of these basic building materials and to which our customers had looked for the machinery that goes into infrastructure which is very important in our metals market are going to have a very flat period so that concern about creating new capacity to meet the shortages which a few years ago we thought we foresaw in the mid-eighties seems now not to be an issue.

Our issue rather is to operate cost effectively the capacity we now have available until we can see a little more clearly the resumption of growth that surely will come with the growth in population, but it is probably at least 10 years down the road.

Mr. DUNN. I would like to make one comment on that. I think you have to deal with these in a case-by-case system. Cobalt as I mentioned in the statement, there is abundance of cobalt in the marketplace and there is abundance of cobalt production, and maybe there is not as much interest in bilateral arrangements to develop new production, but it should be focused more on recovery.

In another mineral such as chromium there are yet untapped resources that may be subeconomic and there might be some opportunities there such as development in the Pacific Basin. It is pretty hard to make a generalized statement on these and I think you have to deal with each one individually, understand the market situations and the criticality of U.S. needs.

Mr. **Barber**. I think that the point that GAO was making was that in the Common Market and in Japan, important government finance is available to assist the Japanese and the European-based mining companies to develop offshore sources of supply. The U.S. mining companies do not have access to that sort of financing to develop resources outside of the United States, and it puts us at a competitive disadvantage with our foreign competitors.

The **Chairman**. A competitive disadvantage might not necessarily harm U.S. security if those supplies are available to us in the event of a crisis.

Mr. **Barber**. That is correct.

The **Chairman**. But could if indeed we become dependent upon areas that can be denied to us which is just another dimension of the same problem I guess.

Mr. **Barber**. Well, except that I always get down to the fundamental that we are now in a period where there is a great deal of concern about global conflict, and history tells us without a doubt that it was the capacity of North America to keep the allies in the field that resulted in the outcome of World War I and World War II. That depended very importantly during those troubled times on having a healthy domestic mining and minerals processing industry.

I heard the ferroalloy people talking earlier about the importance of domestic processing plants. Mr. Dunn adverted to the same thing and probably extends it in his statement. I would say the same thing about our copper, lead, and zinc smelters. That gives us the flexibility to respond to unusual conditions. Without that processing capacity, it is an entirely different problem in terms of national security.

The **Chairman**. I underscored that portion of it in the statements that have been made because that is essential to understand.

A colleague of mine in the House in a statement in Canada yesterday used a term with respect to current world responses in the event of a world crisis, in the event war should break out, major war between the United States and the Soviet Union which we all hope to avoid. He made it in a slightly different context, but nevertheless it is pertinent. He said this is a come-as-you-are party. This is a situation in which you simply wouldn't have the time to build up the resources as we did at the beginning of World War II to create new resources, to open new mines, to build new factories.

It is a question of how much, not only a question of ability or gross strength, but it is the need to be able to respond quickly in the event of a crisis, and certainly the minerals if it is indeed a come-as-you-are party will find itself very embarrassingly exposed at that party to the weaknesses that are evident in it today and particularly that are developing as we shift greater and greater emphasis to foreign countries for basic supply and basic processing, and that is one of the things that really bothers me as I talk to a number of futurists who are generally acadamedicians of impeccable repute who look at the story of a world market and they look for the efficiency in that world market in terms that don't allow for any adjustment or any aberrations in that market in the event of world political crises.

A come-as-you-are party that is dependent upon South African production, South Central African production, the availability of materials from the Soviet Union, competition for supplies with various areas of the world seems to me to be a very dangerous party to contemplate.

Mr. **Barber**. Precisely.

The **Chairman**. I am a little bit concerned then as we get into this question of funding of developments in LDC's and Mr. Barber, you pointed to something in a way that hasn't been raised before, and that is that foreign governments deciding to maintain employment or to enhance economic growth in their countries choosing to do so in basic industries that compete in the world may indeed exacerbate their own conditions over time.

Mr. **Barber**. Precisely.

The **Chairman**. Have you looked at the question as they will address it in terms of the relative economic choices that they face?

How do they get more jobs for their people, which is more economically efficient for them even though it might exacerbate the conditions in the basic industry markets?

Mr. **Barber**. I have thought a great deal about that. This is an extraordinarily complex problem. In developing economies, looking at a country that is operating at a very low GNP per capita, if it has mineral resources, it will identify them as a prime target for development, but the reality is that a mineral resource is a resource which produces economic rents only if it commands a fair price in world marketplace, and it is a cyclical industry. That we know, because our markets are exceedingly, well, they respond to the industrial cycle, and the fact is that history again tells us that this is a very, very powerful swing in demand. If you have a balance sheet you have to respond to that either by storing your production as we all have done some, and then when you run out of money, you have to curtail it. You may curtail before you run out of money based on your judgment as to what is going to be required.

The dynamics, if you look at it from the point of view of a poor country, is to produce more when the price goes down. The problem of a finance minister in a country heavily dependent on minerals is quite an impossible one when his revenues from foreign exchange which are all built into his national plan may change by 25 or 50 percent in the course of 1 year. It was for that reason that the developed countries set up this concept of compensatory financing to support the national plan, but we have learned in this last 2 years that its practical consequences was to encourage or accommodate—I don't want to use the normative word, so let's say to accommodate maximizing production of a commodity which was not being used by consumers, and the consequence was that the price not only for the country producing the copper but for everybody else was reduced well below remunerative levels for all but a few mines.

Now that mechanism is very clear and there aren't rights and wrongs that I would attach to it, but I would say it is a self-destructive mechanism. We ought to look at what has happened, learn what we can from it, and see if we aren't bright enough to develop an alternative.

I did make a specific suggestion and that is that if the IMF or an agency to serve a purpose, a multinational purpose, should see this coming and see this impossible condition facing a finance minister of a country heavily dependent on minerals and instead of saying, as the current mechanism is, you will be guaranteed what I believe should be your normal return from these metals accommodating continued production, would say I will guarantee your revenues provided your production not exceed last year's levels or the average of the last three levels. That meets the foreign exchange. That meets the employment criteria which they always say they have to do, and it would relieve not only the country with whom the agreement is made but everybody else of the burden of excess supplies.

Now I say this can't be uniform. The doctrine that has prevented any rational developments in this area which have been elaborately discussed over the last 10 years is the concept that if Chile does something, Peru has to do it and Zambia and Zaire all at the same level. I think from my years of living with the problem I believe that this approach isn't going to work. That is why I say it has to be the stronger people. What Chile might do is one thing. What Zambia might do which is a very, very difficult case, is quite different.

The **CHAIRMAN**. Your suggestion is that there must be an external discipline placed upon those decisions as well as an external stimulus?

Mr. **BARBER**. I look at the financial discipline as really the only thing that works universally, that we all respond to.

The **CHAIRMAN**. There are a number of parallels that you could look to. We have a domestic program in the production of dairy products that are in surplus supply and we subsidize this production without limiting its quantity and we increase supplies.

Mr. **BARBER**. Precisely.

The **CHAIRMAN**. Therefore, increasing the demand for price support.

Mr. **BARBER**. Like the PIK program that you gentlemen invented a year ago out of a similar problem.

The **CHAIRMAN**. The same question can be asked with respect to automobiles. Is it more economically efficient for Japan to stimulate the production of automobiles to be sold here regardless of their cost or to maintain employment in their country and production and economic activity in a different way?

Are we better off in this country to pay unemployment compensation and job retraining benefits to unemployed auto workers or subsidize the production of automobiles? I am not suggesting by asking the question I have the answer, but individual countries making different choices will respond differently and in Chile it is obvious that copper production to them even at marginal loss is more efficient to them than it is to have all those people unemployed.

Mr. **Barber**. I would suggest if their production last year was no greater than it had been in 1981 their revenues might have been substantially greater.

The **Chairman**. I understand that.

Mr. **Dunn**. Just to follow on with your comments there, I think we would like to use as the buffering aspect of this whole question, it would be the market system, and the question is whether you are dealing with cost economics or noncost economics.

I would disagree somewhat with Mr. Barber on singling out Chile. Chile is a very, very rich company with a very poor owner, and I think if you look at Codelco—or not Chile. Codelco is a very rich company with a poor owner, and Codelco is subsidizing Chile rather than Chile subsidizing Codelco. You are dealing with a country that has perhaps the lowest cost copper and lead than anywhere in the world and they have responded to adverse market situations perhaps as any market-oriented company would, that when their revenues are dropping off, they attempt as long as they are continuing to cover their costs, so I think I agree, though, that you have to deal with each one individually and you cannot develop a uniform set of rules that will apply to all.

Mr. **Harris**. If I may comment on the automobile industry, particularly in the context of the U.S. situation, I think that need there is for a reasonable amount of time to make a transition from a flood in the automobile industry and the suppliers all recognize that into the future where if productivity improvements are standard, they do, in fact, with the justified confidence expect to be competitive.

The **Chairman**. There are a number of complexities that you can add to the equation, not the least of which would be our monetary policies that have relatively high real interest rates that stimulate in the world market an abnormally high value of the dollar as against other currencies, and that adjustment alone would probably wipe out the differential in a great number of industries but still will not yield a solution in areas such as basic metals production where we are looking at base resource developments based upon where the deposit lies.

That is a little different than it is at the refining industry perhaps, the smelting and the metal production aside from the ore production.

In the Defense Department report of May 1982, entitled, "Soviet Global Power Projection," it states that an element of the Soviet's oil and mineral denial strategy is one of market manipulation.

Can any of you gentlemen give this committee an example of Soviet market manipulation?

Mr. **Harris**. I think the one that received the most publicity recently has been their release of large quantities of metal into the marketplace which depressed prices and had the effect of making production uneconomic for a number of producers in Canada and elsewhere. I think that is an excellent illustration.

Mr. **Barber**. I think of it more as an erratic policy. They do not publish their production and consumption statistics, and from time to time they are purchasers and from time to time sellers.

In my own company's experience, there was a period 2 years ago when they put large quantities of asbestos on the European market, severely disrupting the normal marketing channels for a period.

The **Chairman**. Some have suggested that the Soviet Union suddenly became involved in the strategic metals and minerals markets in a way that they had not done before. Just several years ago there were those who thought it was done because they were no longer self-sufficient in their own country. Others thought it was done to increase their political and economic power in the areas where the metals were produced. Others thought it was just another market manipulation in which they sought to maximize gain as they did when they bought grain from the United States, thus running the price up and resold it on the world market, making a nice profit on the runup in price, never having used it totally themselves, so I suppose there are a variety of different ways in which we can view their activity in their metals markets, but it is clear I believe that over the last 5 or 10 years they have increased net purchases of metals in markets where heretofore they had always sought self-sufficiency and self-sufficiency alone.

Would you agree with that?

Mr. **Barber**. I believe that is true on the major metals, yes. In terms of the particular strategic metals, a number of us wonder with some concern about their adventurism in Central and Southern Africa which are uniquely tied to our requirements. I am speaking particularly of cobalt, platinum, manganese.

Mr. **Dunn**. In the area of nickel, the Russians recently developed a very, very large ore body in Zaire by the name of Irels, and their entry in a major way into the market I think was motivated more by earning foreign exchange than perhaps any strategic or political aspects. It is a very large, very rich mine.

I agree that their greatest influence has been in their marketing methods. They are very heavy-handed when they decide. I think it is typical of the bureaucracy when they decide to sell, they sell, and it is in large quantities and it has a considerable impact on the market so they move in and out, and they are very heavy-handed. They are either totally in or totally out, and it is the disruptive method that they are marketing their material rather than the effect that they have in the market.

Mr. **Harris**. I would agree with that observation about their disruptive methods as evidenced by their decision not to sell titanium rather quickly—another illustration.

The **Chairman**. A great many of us will point to the vulnerability of U.S. production capacity to the loss of supplies that may come from an area such as central Africa. There are others who will argue that the need for foreign currency, the need for money, will prevent any disruption of those supplies. They will point to experience we have in the oil markets today, that no matter how Libya may be disaffected from the policies of the industrialized nations of the world, they continue to produce and sell their oil because they need the currency.

The same thing is true of Iran as an example. Is that a valid argument? And if so, does it offset our concern about the loss of sources of strategic minerals?

Mr. **Barber**. My comment would be as long as the markets are open, it is a perfectly valid argument, but the very reason we are discussing strategic and critical materials is that there are times when the sea lanes and the markets are disrupted, and those are the occasions to which we are directing our attention.

Mr. DUNN. I think in the past this has been agreed, but you are dealing here now with perceived criticality and perceived vulnerability, and you really don't have all the facts and you could conjure up a set of circumstances where what has happened in the past would not continue on in the future.

I think looking at the various critical minerals that we are facing, chromium would be one where we could really face a cutoff. All the concentration of the mineral resources are in southern Africa, and perhaps there should be some more effort to develop other subeconomic deposits at this time, some of which are in the Pacific basin.

The CHAIRMAN. Gentlemen, thank you very much for your testimony today. I very much appreciate it. Somehow we need to stimulate a wider audience and a greater national concern about this problem that we face.

Thank you very much. We will hear next from a panel of Mr. Alfred Schneier, American Die Casting Institute; Dr. Karl G. Harr, Jr., president of the Aerospace Industries of America; Ms. Judith La Drew, international commercial programs, Pratt & Whitney.

Your prepared statements together with the attachments thereto will be made a part of the record in full. You are invited to deliver those statements, summarize them in whatever manner you wish. If you will proceed, please, Mr. Schneier.

## STATEMENT OF ALFRED SCHNEIER, JR., ON BEHALF OF THE AMERICAN DIE CASTING INSTITUTE, INC.

Mr. SCHNEIER. Good morning, Mr. Chairman. My name is Alfred Schneier, and I am chairman of the board of Advance Pressure Castings Corp. of Denville, N.J., and rather than read the prepared statement in its entirety, I would just like to touch on some of the highlights and possibly save some time for questions later.

The die casting industry is a user industry of the strategic metals and the minerals we have been listening about this morning, and it is one of the industries that the Nation is dependent upon to sustain both its commercial and wartime capability.

We know that we depend upon some 23 vital and strategic minerals. The ones that affect the die casting industry the most are such minerals as cobalt, manganese, titanium, chromium, platinum, aluminum, tin, nickel, and zinc. Some of these materials originate in areas or parts of the world possibly as unfriendly to the United States or as others from areas considered friendly.

In the case of zinc, for instance, the primary suppliers are Canada, Mexico, and Australia. We import over 65 percent of our annual capacity per year.

We are also concerned with those strategic minerals that are used in the steels with which we build our dies or molds to produce the die castings that are used in these various industries and these tools and steels contain again such minerals as chromium, molybdenum, silicon, vanadium, carbon, manganese—again materials that are in short supply here because we import them in very large percentages.

Total reliance on Third World and Communist nations for many of these materials is of great concern to the die casting industry. Should their supply be interrupted, die manufacture and thus die casting production would eventually cease.

I would like to spend a moment just to review what is a die caster? Die casting is the manufacturing process by which molten metal, usually aluminum, zinc, or magnesium alloy, is forged under high pressure into a die or mold to make a metal shape. After rapid solidification of the metal, the die opens, the part is ejected, and the cycle is repeated. Production quantities per part can range from thousands to millions, depending on the customer's total requirement. The industry makes components for automobiles, appliances, computers, farm machinery, military gear, communications equipment, and a myriad of other consumer and industrial products.

Because of price and productivity factors on key parts, the defense and automobile industries, computer companies, and numerous other bedrocks of our economy would not be cost efficient without the use of die castings. This technology, therefore, stands as a vital cog in America's economic structure. Let me illustrate how vital the die casting industry is. If the entire die casting industry was paralyzed from a strategic minerals and metals cutoff, the production of most die casting plants would be disrupted and the ensuing domino effect would shut down user industries and cause substantial unemployment on a national scale. The resultant economic transformation would require years of costly redesign, retooling, and retraining.

This would include a dangerous halt in defense equipment, automobile and computer production, significantly higher cost for manufacturing identical parts, a lifestyle change due to the disappearance of many consumer products that could no longer be produced economically, extensive retraining of highly skilled workers, enormous capital expenses, inflationary surges, and massive unemployment.

In the case of my own company, Advance Pressure Castings, which has a total employment of approximately 200, the domino effect of our one company shutting down could have a most disastrous effect across a broad spectrum of industry. Many of Advance Pressure's customers are large, multinational companies engaged in the manufacture of products vital in both peace and wartime.

Take for instance, Mr. Chairman, the Xerox Corp. Should we be unable to supply just this one customer, Xerox would be forced not only to shut down those assembly lines utilizing our castings, but also be required to shut off the incoming products from other suppliers utilized in the manufacture of this particular equipment. In discussions with Xerox, we have ascertained that within a 30-day period, unemployment could reach 5,000 to 7,500, and should the shutdown last longer, that figure would at least double, conceivably triple.

Please bear in mind we have only picked one of our customers to illustrate the point.

As an aside, what I have said, of course, equally applies in the event we had minerals but no energy. One of the interesting things that we listened to earlier was the situation with regard to zinc. Zinc is one of the two primary alloys utilized by the die casting industry. An example in zinc took place just a few years ago. Zinc usage for die casting grew steadily in the years up until 1973. Then consistent with the economic boom at that time, apparent shortages of many materials and commodities started to occur in the marketplace.

However, in many cases there actually were no shortages. The situation was a syndrome of speculator influence and stockpiling. In the case of zinc, the London Metal Exchange responded to this artificial demand by skyrocketing the price of zinc from a low in 1973 of 163 per metric ton to a high in 1974 of 872 pounds per metric ton. Later in 1974 it dropped to 300 pounds per ton. This period of dramatic price escalation in turn led to domestic prices for imported zinc of up to $1 per pound. Many die casters were obliged to purchase this excessively priced material to meet customers' schedules. With the passthrough of these costs to die casting customers, irretrievable harm was occasioned to the die casting markets.

As we see it, the United States is vulnerable to what might be termed a two-pronged attack. First, price—should one or more of these offshore supplier nations decide to follow the example of OPEC we would very likely be forced to pay prices out of touch with reality in order to effect delivery, but I believe what is more important is what could be done to our industrial base should one or more of the critically needed strategic materials suddenly be denied us.

Assuming some stockpile and assuming a normal amount in inventory, it would only be a question of time before priorities would rapidly have to be established. Even this would fail as supplies ran out. There would certainly be a scramble to substitute materials and manufacturing processes, but possibly the time required would not enable this to be accomplished before some bigger economic disaster overcame us.

We have no magic wand to offer this committee to solve the problems of strategic minerals. From where we sit there are only three viable courses, namely, actively pursue the search for viable alternate minerals which are home grown; provide more than adequate Government-held stockpile of strategic minerals; and actively develop sources of strategic minerals if they so exist within our 50 States in a manner compatible with both environmental and other considerations.

Assuming the world economy would rebound to the GNP figures enjoyed throughout most of the 1970's, unless decisive action is taken, we anticipate seeing some dislocations in the marketplace similar to those experienced in the 1970's, but this time probably at higher prices. Only time will tell what future events in the area of foreign relations might alter this scenario in a negative way.

This subject has long been a concern of the American Die Casting Institute members. Accordingly, we published a paper, "Position Paper on Minerals and Metals" in May of 1981. Copies are available here to provide an in-depth study and substantiation of the remarks I have made today.

Thank you very much.

[The prepared statement of Mr. Schneier follows:]

## STATEMENT OF ALFRED SCHNEIER, JR., ON BEHALF OF THE AMERICAN DIE CASTING INSTITUTE, INC.

June 20, 1983

Senator McClure and Members of the Committee on Energy and Natural Resources, my name is Alfred Schneier, Jr., Chairman of the Board of Advance Pressure Castings Corporation of Denville, N. J. I am also a Past President of the American Die Casting Institute, the trade association of the die casting industry, with national offices located in Chicago, Illinois; on whose behalf I am appearing before you today. My background includes working in all phases of the die casting industry, both here and abroad, since completing my schooling and service in WW II.

The American Die Casting Institute founded in 1928 is the trade association of the die casting industry which has sales approaching 6 billion dollars per annum. American die casting firms operate more than 1200 plants which produce approximately 1.8 million tons of die castings annually. The major alloys die cast are aluminum, zinc, magnesium and copper. The industry employs upwards of 70,000 people located from coast to coast.

Why are we concerned with the geo-politics of strategic and critical minerals? An overview reveals the following:

> The United States is dependent on imports of some 23 vital and strategic minerals. The ones affecting our industry and the percentage of imports are:

| Mineral | Imports | Origin |
|---|---|---|
| Cobalt | 98% | Zaire, Belgium, Zambia |
| Manganese | 98% | Gabon, Brazil, South Africa |
| Titanium | 98% | Japan, USSR, China |
| Chromium | 90% | South Africa, USSR, Zimbabwe, Turkey |
| Platinum | 90% | South Africa |
| Aluminum | 85% | Jamaica, Surinam, Australia, Guinea |
| Tin | 85% | Malaysia, Thailand, Bolivia, Indonesia |
| Nickel | 70% | New Caledonia, Canada |
| Zinc | 65+% | Canada, Mexico, Australia |

The two major alloys die cast, aluminum and zinc, are included; however, the die casting processing could be brought to a total standstill should we be unable to buy the special H-13 type steels used in the manufacture of our molds, or dies as we call them, which contain critical metals to impart the exact properties required. H-13 steel comprised:

| | |
|---|---|
| Chromium | 5.00% |
| Molybdenum | 1.35% |
| Silicon | 1.00% |
| Vanadium | 1.00% |
| Carbon | 0.40% |
| Managanese | 0.30% |

An alternate die steel -- termed 300 maraging -- comprised:

| | |
|---|---|
| Nickel | 18.5% |
| Cobalt | 9.0% |
| Molybdenum | 5.0% |
| Titanium | 0.65% |
| Aluminum | 0.1% |

Total reliance on Third World and Communist nations for many of these materials is of great concern to the die casting industry. Should their supply be interrupted, die manufacture (and thus die casting production) would eventually cease.

Let's spend just a moment to review what is a die casting. Die casting is the manufacturing process by which molten metal, usually of aluminum, zinc or magnesium alloy, is forced under high pressure into a die, or mold, to make a metal shape. After rapid solidification of the metal, the die opens, the part is ejected and the cycle is repeated. Production quantities per part can range from thousands to millions, depending on the customer's total requirement. The industry makes components for automobiles, appliances, computers, farm machinery, military gear, communications equipment and a myriad of other consumer and industrial products.

Die casting is a time-honored method for producing accurately-dimensioned, sharply-defined and smooth-surfaced metal parts in very large quantities. Because complex and intricate parts can be rapidly cast to close dimensional tolerances, there is little need for after-machining or processing. Thus, die casting is frequently the most efficient and least expensive way to manufacture component products.

Because of price and productivity factors on key parts, the defense and automobile industries, computer companies and numerous other bedrocks of our economy would not be cost-efficient without the use of die castings. This technology, therefore, stands as a vital cog in America's economic structure. Let me illustrate just how vital the die casting industry is.

If the entire die casting industry was paralyzed from a strategic minerals and metals cut-off, the production of most die casting plants would be disrupted and the ensuing domino effect could shut down user industries and cause substantial unemployment on a national scale. The resultant economic transformation would require years of costly redesign, retooling and retraining. This would include:

a dangerous halt in defense equipment, automobile and computer production;

significantly higher costs for manufacturing identical parts;

a lifestyle change, due to the disappearance of many consumer products that could no longer be produced economically;

extensive retraining of highly-skilled workers;

enormous capital expenses;

inflationary surges; and

massive unemployment.

In the case of my own company, Advance Pressure Castings, which has a total employment of approximately 200, the domino effect of our one company shutting down could have a most disastrous effect across a broad spectrum of industry. Many of Advance Pressure's customers are large multi-national companies engaged in the manufacture of products vital in both peace and wartime. Take for instance the Xerox Corporation. Should we be unable to supply just this one customer, Xerox would be forced not only to shut down those assembly lines utilizing our castings but would also be required to shut off the incoming products from other suppliers utilized in the manufacture of this particular equipment. In discussions with Xerox, we have ascertained that within a 30-day period unemployment could reach 5,000 to 7,500; and, should the shutdown last longer, that figure would at least double and conceivably triple. Please bear in mind we have only picked out one of our customers to illustrate the point.

As an aside, what I have said, of course, would equally apply in the event we had minerals but no energy.

Die casting usage of strategic materials is quite significant. 1982 estimated figures are as follows:

| | | |
|---|---|---|
| Aluminum | -- | 1,230 million pounds |
| Zinc | -- | 530 million pounds |
| Magnesium | -- | 10 million pounds |
| Copper and Lead | -- | 27 million pounds |

Aluminum and zinc and the ores and concentrates from which they are produced are a major concern because of their foreign sources and large usage. Should their supply be interrupted, die casting production would soon cease.

We are faced with the vagaries of the secondary aluminum market. It takes approximately only 5% of the energy to recycle one pound of aluminum scrap versus the energy requirements to produce the same pound of primary aluminum. It is estimated that approximately 4-1/2 billion pounds of secondary aluminum scrap will be generated in 1983; of which, it is estimated, some 600 million pounds is expected to be exported. What effect this will have is to create a temporary imbalance which could, and usually does, have a direct impact on price. An example of this is what happened some years back in the case of zinc. Zinc usage for die casting grew steadily in the years up until 1973. Then, consistent with the economic boom at that time, apparent shortages of many materials and commodities started to occur in the market place. However, in many cases there actually were no shortages; the situation was a syndrome of speculator influence and stockpiling. In the case of zinc, the London Metal Exchange responded to this artificial demand by skyrocketing the price of zinc from a low in 1973 of L163 per ton to a high in 1974 of L872 per ton. Later in 1974, it dropped to L300 per ton. This period of dramatic price escalation, in turn, led to domestic prices for imported zinc of up to $1.00 per pound. Many die casters were obliged to purchase this excessibly priced material to meet customers' schedules. With the pass thru of these costs to die casting customers, irrevocable harm was occasioned to die casting markets.

As we see it, the U. S. is vulnerable to what might be termed a two-pronged attack.

First, price. Should one or more of these off-shore supplier nations decide to follow the example of OPEC, we could very likely be forced to pay prices out of touch with reality in order to effect delivery. But I believe what is more important is what could be done to our industrial base should one or more of the critically needed strategic materials suddenly be denied us. Assuming some stockpile and assuming a normal amount in inventory, it would only be a question of time before priorities would rapidly have to be established. Even this would fail as supplies ran out. There would certainly be a scramble to substitute materials and manufacturing processes, but possibly the time required would not enable this to be accomplished before some bigger economic disaster overcame us.

We have no magic wand to offer this Committee to solve the problem of strategic minerals. From where we sit, there are only 3 viable courses; namely:

1. Actively pursue the search for viable alternate minerals which are "home grown."
2. Provide more than adequate government held stockpile of strategic materials.
3. Actively develop sources of strategic minerals, if they so exist, within our 50 states in a manner compatible with both environmental and other considerations.

Assuming the world economy will sooner or later rebound to the GNP figures enjoyed throughout most of the 1970's, unless decisive action is taken, we anticipate seeing some dislocations in the market place similar to those experienced in the 1970's but this time, probably at higher prices. Only time will tell what future events in the area of foreign relations might alter this scenario in a negative way.

This subject has been a long time concern of the American Die Casting Institute's members. Accordingly, we published a paper entitled "Position Paper on Minerals and Metals" in May of 1981. Copies are here available which provide an in-depth study and substantiation of the remarks I have made today.

I wish to thank you for your kind attention and am prepared to answer, to the best of my ability, any questions you may have.

Thank you very much.

# POSITION PAPER ON MINERALS AND METALS

* * *

MAY, 1981

American Die Casting Institute, Inc.
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# AMERICAN DIE CASTING INSTITUTE

# POSITION PAPER ON MINERALS AND METALS

MAY, 1981

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## I. EXECUTIVE SUMMARY

The United States is dangerously dependent upon non-domestic sources for many strategic minerals and metals. Much of these are obtained from Third World and Communist nations. American industry and defense forces can not operate without these vital materials which include:

| Mineral | Imports | Origin |
|---|---|---|
| Cobalt | 98% | Zaire, Belgium, Zambia |
| Manganese | 98% | Gabon, Brazil, South Africa |
| Chrome | 90% | South Africa, USSR, Zimbabwe, Turkey |
| Aluminum ores | 85% | Jamaica, Surinam, Australia, Guinea |
| Zinc ores | 62% | Canada, Mexico, Australia |

Many of the supplier nations are subject to political or economic turmoil and are being threatened by the Soviet Union. There is a widely-reported "resource war" underway throughout the world where Communist powers are attempting to gain control over the West's lifeblood strategic materials.

America's problems are being compounded by excessive environmental regulations and investment disincentives which serve to cripple U.S. mine, smelter and secondary recovery operations. This makes us even more dependent on unreliable foreign governments.

The die casting industry is critically dependent on a steady supply of these strategic materials. Without them, die casting production would soon cease. And because of a domino effect, production of defense equipment, computers, automobiles, electronic equipment and hundreds of other basic industries would halt as well.

The American Die Casting Institute recognizes the enormity of the Strategic Minerals and Metals crisis, and offers this analysis and program of recommended actions in response.

Summary of ADCI Recommendations:

A. Acknowledge the Strategic Minerals and Metals Crisis.

B. Implement the Mining and Minerals Policy Act of 1970.

C. Implement the National Materials and Minerals Research and Development Act of 1980 -- to develop a Strong U.S. Minerals and Metals Policy.

D. Strengthen Strategic Material Stockpiles.

E. Review Mineral Access Legislation to Increase Domestic Mining.

F. Review Environmental Legislation and Regulations to Increase Domestic Mining, Smelting and Secondary Recovery.

G. Revise Tax Codes to Encourage Business Investment.

H. Review Foreign Policy Positions.

I. Control Strategic Material Exports.

J. Develop Additional Mineral and Metal Resources.

## II. DIE CASTING

### A. THE AMERICAN DIE CASTING INSTITUTE . . . REPRESENTING A $6 BILLION INDUSTRY

The American Die Casting Institute (ADCI), founded in 1928, is the trade association of the $6 billion die casting industry. Headquartered in greater Chicago, ADCI consists of 250 member companies, including custom die casters (which produce die castings for sale to others), captive die casters (which produce die castings for their own use), and suppliers to the die casting industry. Membership primarily includes United States firms which produce most of the die castings generated in this country.

Over its 50-year history, the Institute has developed a creditable list of achievements: "Product Standards for Die Casting"; a Certified Zinc Alloy Plan for the metallurgical control of zinc alloys; Washington representation and activity with respect to safety, price controls, duties, imports/exports, energy and product liability; establishment of the Die Casting Research Foundation to advance die casting technology through research; establishment of the David Laine Memorial Scholarship Program to encourage and aid University students pursuing a die casting career; market and management data development...all directed towards continued growth of the industry's capability to serve our Nation's production needs on an economical basis.

American die casting firms operate more than 1,000 plants, which produce 2.2 million tons of metal die castings annually. Die cast parts are produced from aluminum, zinc, magnesium, and copper alloys. The industry employs upwards of 70,000 people located from coast to coast.

### B. DIE CASTING'S IMPACT ON THE AMERICAN PUBLIC

Die casting is the manufacturing process by which molten metal, usually of aluminum, zinc or magnesium alloy, is forced under high pressure into a die, or mold, to make a metal shape. After rapid solidification of the metal, the die opens, the part is ejected and the cycle is repeated. Production quantities per part can range from thousands to millions, depending on the customer's total requirement. The industry makes components for automobiles, appliances, computers, farm machinery, military gear, communications equipment, and a myriad of other consumer and industrial products.

Die casting is a time-honored method for producing accurately-dimensioned, sharply-defined and smooth surfaced metal parts in very large quantities. Because complex and intricate parts can be rapidly cast to close dimensional tolerances, there is little need for after-machining or processing. Thus, die casting is frequently the most efficient and least expensive way to manufacture component products.

Because of price and productivity factors on key parts, the defense and automobile industries, computer companies and numerous other bedrocks of our economy would not be cost-efficient without the use of die castings. This technology therefore stands as a vital cog in America's economic structure. Let us illustrate just how vital the die casting industry is.

If the production of several die casting plants was disrupted, the ensuing domino effect could shut down user industries and cause substantial unemployment on a national scale.

If the entire die casting industry was paralyzed from a strategic minerals and metals cut-off, resulting economic transformation would require years of costly redesign, retooling and retraining. This would include:

- a dangerous halt in defense equipment, automobile and computer production;
- significantly higher costs for manufacturing identical parts; and
- a lifestyle change, due to the disappearance of many consumer products that could no longer be produced economically.
- extensive retraining of highly-skilled workers;
- enormous capital expenses;
- inflationary surges;
- massive unemployment;

### C. Die Casting's Usage of Strategic Materials

America's die casting industry is a significant user of strategic materials.

1. Castings themselves are produced from several key metals:

Aluminum -- 1,434 million pounds in 1980.
Zinc -- 700 million pounds in 1980.
Magnesium -- 17 million pounds in 1980.
Copper and Lead -- 32 million pounds in 1980.

Aluminum and zinc and the ores and concentrates from which they are produced are a major concern because of their foreign sources and large usage. Should their supply be interrupted, die casting production would soon cease.

2. Dies used for die casting require special steels which contain critical metals, to impart exact properties.

The workhorse die steel -- termed H13 -- is comprised of:

| | |
|---|---|
| Chromium | 5.00% |
| Molybdenum | 1.35% |
| Silicon | 1.00% |
| Vanadium | 1.00% |
| Carbon | 0.40% |
| Manganese | 0.30% |

A secondary die steel -- termed 300 maraging -- is comprised of:

| | |
|---|---|
| Nickel | 18.5% |
| Cobalt | 9.0% |
| Molybdenum | 5.0% |
| Titanium | 0.65% |
| Aluminum | 0.1% |

Total reliance on Third World and Communist nations for many of these materials is of great concern to the die casting industry. Should their supply be interrupted, die manufacture (and thus die casting production) would eventually cease.

## III. THE STRATEGIC MINERALS AND METALS CRISIS

### A. OVERVIEW

The Strategic Minerals and Metals Crisis threatens the 1980's as the Oil Crisis did the 1970's. Unknown to most Americans, our nation holds a critical dependence on unstable Third World and Communist countries for a broad range of minerals without which U.S. defense and industry cannot operate Local wars, political crises and economic boycotts in those nations could wreck havoc in America. Compounding this problem, we are competing with our allies for strategic materials and even our "friendly" supplier nations are subject to delivery problems and pricing temptations regarding the materials they sell.

In short, a cut-off of certain vital materials would endanger U.S. defense and cripple the economy. Price or supply manipulations would have wrenching domestic consequences. America is dangerously exposed, yet is doing very little about it.[1,2,3]

* * * * *

The U.S. government maintains a list of 36 vital "strategic" minerals of which 23 must be heavily or totally imported.[4] This includes:

- Nearly 100% of our manganese, cobalt and titanium
- 90% of our chromium and platinum metals
- 85% of our aluminum and tin
- 70% of our nickel
- 60% of our zinc

Other largely imported strategic minerals are tungsten, cadmium, tantalum, columbium and selenium.[5]

These strategic materials are vital -- not only for die casting -- but for the production of steel, computers, jet engines, defense weapons, automobiles, oil refineries, industrial tools and machinery, aircraft and hundreds of other critical end-products.[6,7]

Prime strategic minerals are imported from politically unstable African nations, including Zimbabwe, Zambia, Zaire, Namibia and South Africa. This region is so rich in minerals and so troubled by Russian forays that it is becoming known as "The Persian Gulf of Minerals".[8]

Other world sectors that supply U.S. mineral needs, which are politically or economically sensitive, are Latin America (e.g. Jamaica and Surinam) and the Soviet Union itself.

Analysts suggest that Communist military actions in both Africa and the Caribbean are part of a Russian master plan to control the West's strategic minerals. There is a reputed "resource war" underway to deny the West access to its lifeblood raw materials.[9,10]

Statements by Khrushchev in 1960 and Brezhnev in 1973 call for Russia to influence the mineral-rich Third World nations and thereby hold the West hostage to Moscow. It is a strategy that circumvents Western defense treaties and political control, yet will render it helpless in obtaining absolutely critical supplies.[11]

This resource war is manifested by 20,000 Cuban troops and East German and Soviet advisors encircling or within southern Africa. By direct military intervention or support of Marxist governments, or by fomenting instability, Russia is positioning itself so that it could deny these supplies to the West.

Military interventions have already occurred in Angola, Ethiopia, Mozambique and Zaire. A new Marxist-oriented government is in Zimbabwe. Cuban soldiers, advisors or technicians have recently been reported in 17 African states. Covert or subversive Russian operations exist in Namibia, South Africa, Zaire's Shaba Province and neighboring areas.[12]

Direct parallels exist in Latin America, where Marxist states in Grenada, Guyana and Nicaragua, and civil unrest in El Salvador, Guatemala and Surinam are often linked to Cuban/Soviet influence. Long-term objectives include Russian presence at bauxite supplies, Mexican and Venezuelan oil shipments, strategic sea lanes and the Panama Canal.[13]

The crisis is exacerbated by total U.S. dependence on a few unfriendly or unstable nations for a single mineral. Virtually all chrome is supplied by South Africa, Russia, Zimbabwe and Turkey...cobalt by Zaire, Belgium, Zambia and Finland...manganese by Gabon, Brazil and South Africa...bauxite by Jamaica and Surinam.[14]

Even friendly nations can not be assumed "safe and secure" regarding minerals and metals imports. Allies like Canada and Mexico have recently experienced miners' strikes, export restrictions and price increases, nationalization of industries and tough environmental laws that restrict mining.[15,16] Today's cooperative nations may undergo a change of government, and thereby alter their economic and export practices.

In self-interest, troubled nations can explore OPEC-like cartels to control price and supply.[17] Jamaica, Guinea and Surinam could halt the world's bauxite supply.[18] South Africa can use chrome and platinum as economic weapons against Western apartheid interference.[19] Russia could encourage a few client states to squeeze the West in select strategic materials.

With America so dependent on questionable sources, it becomes unbelievable that domestic mineral and metal policies escalate the crisis. Factors that seem to play into Russia's hands include severe environmental and wilderness laws that have withdrawn 65% of Federal lands from mineral entry. Also, costly pollution requirements that hobble mining and smelting industries and metal import/export laws that work at cross purposes.[20]

Seventeen important Federal laws severely limit mineral development on public lands. Ten major Federal environmental laws and hundreds of state and local specifications have withdrawn tons of U.S. minerals from public access.[21]

Past government failure to recognize the long-term impact of certain policies is most visible concerning chrome -- one of the most strategic of all materials. In one brief period, different U.S. agencies:

- accelerated domestic consumption of chrome for clean air and clean stream equipment and catalytic converters for our cars.
- Embargoed the importation of chrome from Rhodesia, our largest supplier.
- Applied strict environmental enforcement on the "aging" ferrochrome industry, significantly reducing U.S. chrome processing capacity.
- Allowed unlimited export of stainless steel scrap, each ton of which contains 400 pounds of chrome.

These actions hurt our position and demonstrated the need for a coordinated U.S. minerals and metals policy.[22]

For example, by "punishing" Rhodesia, this resulted in their selling excess chrome to Russia, which reportedly resold it to us at three times its original price.[23]

As with chrome, potential crises and conflicting government actions exist with zinc, aluminum and numerous other specialty metals.

* * * * * *

This American Die Casting Institute Position Paper will explore the Strategic Minerals and Metals Crisis and detail the grave consequences inherent in our present stance. It will provide insight into some of the most critical materials, and will conclude with strong, needed government programs to help lessen this dramatic situation.

## B. ZINC

Zinc is a basic metal used for decades in steel galvanizing, die casting and brass production. U.S. industry consumes 1.14 million short tons of zinc annually,[24] relying on domestic production, and imports from Canada, Mexico and Australia.[25]

Traditionally, domestic mining, refining, smelting and scrap recovery generated 50% of U.S. supplies.[26] The material was regarded as safe, secure, abundant and generally price-stable.

But a recent combination of severe U.S. environmental laws and lower-cost overseas producers has shifted America to a state of import dependence.[27, 28, 29] Harsh and costly pollution control requirements have forced the closing of 9 of America's 14 zinc smelters during the last decade.[30] Layers of environmental and health regulations, (some of which may be questioned as unnecessary) have increased processing cost 25% without boosting production.[31] A major new zinc refinery in Clarkesville, Tennessee, is being termed the last of its kind in America.[32] The high cost of money, energy and non-productive pollution control requirements make new domestic facilities unprofitable.

Zinc imports have increased 30% the last year, with foreign government-subsidized producers expanding production.[33] Imports currently account for 62% of U.S. consumption, and with the expected closing of other zinc facilities, they will increase to 66% by next year. For Special High Grade Zinc, which is the preferred and main pricing metal and the only grade of zinc suitable for die castings, imports now fill 75% of demand.[35]

Industry leaders say that resulting dependence on overseas smelters could drastically undercut the U.S. strategic position. "You could get into security of supply problems -- physical interruptions, shipping strikes, wars and local economic problems," said Kenneth Barrow, chairman of Kennecott Copper. "Once our processing capability deteriorates, our ability to negotiate a good deal deteriorates because processors know we have no choice."

The price of this material continues to escalate, from about 30 cents per pound in 1978 to 42 cents per pound today. This occurred despite 25% lower consumption traced to the recession.[36, 37, 38]

Prices are sensitive to major increases because the world inventory is very low. U.S. producers maintain a 45-day stock while overseas companies hold about 30 day's supply. Should strikes or transit problems develop, prices could escalate dramatically.[39]

## C. ALUMINUM

Aluminum is an increasingly important metal for automotive, aerospace and numerous other important applications because of its light weight, formability and relative strength.[40] U.S. industry shipments of 14.6 billion pounds were mostly supplied from imported ore and ingot with the remainder from U.S. mines and U.S. scrap recovery.[41,42]

Primary aluminum is refined from bauxite ore, which is mined in Jamaica, Guinea, Guyana and Surinam.[43,44]

While bauxite imports have been increased recently, they still do not satisfy U.S. demands. In response, about 1.7 billion pounds of aluminum ingot was imported from Canada, Ghana and Norway and about 300 million pounds of semi-fabricated aluminum product imported from Japan, Belgium and France in 1979.[45]

The U.S. also exports ingot and semi-fabricated products, but in much lesser quantities (about 600 million pounds total in 1978).[46]

American vulnerability concerns both imported ore and ingot. Since 93% of vital bauxite and alumina ore is imported -- much from Third World countries -- there are dangers of OPEC-like price manipulation.[47] The International Bauxite Association already established "common prices" for world trade.[48]

Legitimate concerns arise regarding 6-7% higher U.S. demand for ingot the next few years vs. only 5% greater world supply. Since most new capacity will be built overseas, can we rely on these foreign nations to provide an uninterruped aluminum ingot supply?[49]

The U.S. is further dependent on outsiders because virtually no additional domestic capacity is envisioned. Only limited new primary ingot capacity was added during the 1970's and that pattern is not expected to change.

Plants are enormously expensive, and the aluminum industry has had difficulty raising sufficient capital.[50,51] High interest rates make financing very expensive.

Plants use large amounts of electricity, and with oil price increases and recent deregulation, operating costs have soared. Lowest-in-the-nation energy costs in the Pacific Northwest (hydroelectric power furnished by the Bonneville Power Administration) have been raised dramatically in recent years.[52]

Environmentalists have constantly opposed new dams, which provide more than half the power for aluminum manufacture,[53] and tough pollution control laws hurt aluminum as well as other metal producers.

Regretably, foreign governments support their metal companies by providing economic incentives and placing fewer obstacles in their path, thus helping to stimulate plant construction outside the United States.

Finally, the traditional safety valve for aluminum supplies -- secondary aluminum and recycled aluminum scrap -- is coming under sharp attack. The Japanese have intelligently learned that secondary aluminum requires only 5% the electricity to process and 11% the capital cost as does primary aluminum.[54,55,56] By purchasing increasing amounts of secondary aluminum from America every year, they are saving money, slashing their energy costs and importing less oil...all at America's expense. The gravity of this problem can not be understated.

Die casting is concerned because it is the leading user of secondary aluminum in America [650 million pounds per year that are re-melted for castings.][57] Our nation does not have the luxury of exporting critical national resources.

Examining this issue further, secondary aluminum has satisfied a growing portion of America's aluminum requirement. The secondary contribution has risen from 16% of aluminum needs in the mid-fifties to 22% in 1979 (totalling 3.4 billion pounds of secondary recovered scrap in the latter year).[58,59]

Export of secondary scrap has traditionally been minimal -- less than 3% of that volume in 1971.

But exports began to rise dramatically in the mid-seventies, with Japan surfacing as the major customer. Exports now exceed 25% of all U.S. secondary aluminum scrap. Viewing scrap exports as a whole:[60]

| | |
|---|---|
| 1975 | 66,937 short tons |
| 1976 | 108,968 |
| 1977 | 101,663 |
| 1978 | 194,508 |
| 1979 | 307,081 |
| 1980 | 475,167 |

ADCI's Position Paper on Energy, issued May 1979, commented on the need for energy conservation and importance of limiting aluminum scrap exports.[61] The foregoing export data reinforces ADCI's contention that export limitations for aluminum scrap are essential.

This has dramatically increased the price of secondary aluminum to American buyers. As a typical example, aluminum clippings have increased from 21 cents per pound in 1977 to 41 cents per pound in 1979.[62]

The effect has been higher costs for U.S. companies and at times, a domestic shortage of secondary scrap.

ADCI feels it is inconceivable that the United States should not exercise some control over the export of aluminum scrap. The European Economic Community has strict quotas on secondary aluminum scrap export. Of the other major producers, Japan, the Soviet Union and Canada severely limit scrap export.[63] Only the United States "gives away" a natural resource -- having to recreate it at dramatically higher energy and production costs. In addition, this practice encourages greater imports of finished products, thus hurting domestic manufacturers and our international balance of payments.

## D. DIE STEELS

The steel dies used for die casting production contain a number of critical specialty metals. Together, they impart characteristics that enable the die to withstand the stresses caused by thousands of continuous, rapid cycles of molten metal injection. Without these specialty metals, the die casting process would work poorly and inefficiently -- if at all. Needless to say, the adverse effect upon other segments of our national economy would be incalculable.

Among the strategic materials employed in die steels, the most important are chromium, manganese and cobalt. Each is subject to the "minerals crisis" in that supplies come solely or primarily from troubled Third World and Communist nations. Strife-torn southern "High Africa" -- world bread-basket for these vital minerals -- is filled with racial unrest, Marxist governments, Cuban troops, Communist subversion and occasional wars. Import halts or price supply manipulations have occured and remain a dangerous possibility.

Cobalt is a glaring example. This mineral is vital not only in die casting but in aircraft engines, cutting and mining tools, magnets and steel making.[64,65] America imports 98% of its cobalt requirement, largely from Zaire and Zambia (with much smaller quantities mined in the West).[66,67]

When the Katangan rebels invaded Zaire's Shaba Province in 1978, cobalt production there came to a halt, and the world price escalated from $6.85 per pound to $25 per pound under contract and up to $50 on the spot market.[68,69] Interestingly, Russia reportedly bought a two-year's supply of cobalt from Zaire shortly before the invasion.[70,71]

Early in 1980 Russia signed an $85 million arms deal with Zambia that provides them access to cobalt as part of the purchase price. Since 18% of U.S. cobalt imports come from Zambia, we can expect disruption of our markets.[72]

Finally, there are reports of Zaire, Zambia and Finland planning to discuss cooperative cobalt pricing actions, in moves that can be likened to a cartel.[73]

Other die steel materials are subject to similar actions, with manganese being 98% imported (major sources are South Africa and Gabon), and chromium 90% imported (its supplies are from South Africa, Zimbabwe, the Phillipines and the U.S.S.R).[74]

## E. STOCKPILE SHORTAGES

Our nation's strategic stockpile is inadequate. Shortages or even absences of certain key minerals and metals hamper our ability to sustain a major war or other national emergency.

Congress created the Strategic and Critical Materials Act of 1946 to provide an emergency stockpile of vital minerals. At present, there are 93 strategic minerals in the stockpile, valued at $13 billion, and stored in 116 locations ranging from military and General Services Administration depots to industrial plant sites.[75,76]

Current supplies are only at 48% of goal with some minerals in overabundance and others non-existent.[77] About $6 billion is needed to raise the stockpile to three-year defense goals.[78]

Officials point to stockpile imbalances, noting shortages in 43 of 93 categories. Titanium sponge is at 32,000 tons vs. a goal of 195,000 tons. There is no alumina in the stockpile vs. a goal of 11.5 million tons. Cobalt inventories are at 41 million pounds vs. their goal of 85 million pounds. No nickel is stockpiled vs. its goal of 200,000 tons.[79,80] There is no copper, and zinc is at one-third of goal.[81]

Regarding oversupply, quartz crystal is at 2.5 million pounds vs. its goal of 600,000 pounds. There are 140 million ounces of silver, vs. a goal of zero. The stockpile contains 200,000 tons of tin vs. a goal of 42,000 tons. Industrial diamonds are at three times their goal.[82]

Because many minerals are understocked, America's response to a war or other national emergency is placed in jeapordy. Yet Washington has done little to strengthen our stockpile preparedness. No major purchases for the stockpile have been made in 20 years.[83] Presidents Johnson and Nixon sold mineral inventories to help balance the Federal budget. Presidents Ford and Carter tried to replenish stocks, but Congress refused to vote funding. The last Congress has debated a $100 million appropriation,[84] but at this rate, it would take 60 years to satisfy stockpile goals.

Congress has also denied repeated requests of stockpile officials to sell oversupplied materials for about $3.5 billion market price, and use those funds to replenish short stocks.[85,86]

Considering the unstable or unreliable sources of some vital minerals -- and their absolute necessity in times of war or other national emergency -- it seems foolhardy to maintain a weak strategic stockpile.

## F. CONTROLS ON DOMESTIC MINING AND SMELTING[87]

A large number of environmental and safety laws and harsh taxation policies have dampened the U.S. mining industry's ability to supply needed strategic materials. In its own shortsightedness, Congress has made America even more dependent on Third World and Communist nations for these most important metals.

* * * * * *

Beginning with the positives are four pro-minerals chartering laws that recognize America's need for domestically-mined strategic minerals:

- The General Mining Law of 1872
- The Mineral Leasing Act of 1920
- Mining and Minerals Policy Act of 1970
- National Materials and Minerals Policy Research and Development Act of 1980

While these laws encourage the development of our mineral resources, the third has been relatively unheeded and the fourth has been passed but is only just beginning to be implemented.

On the negative side are a battery of environmental and anti-pollution laws that withdraw land from exploration and mining and severely control mining and smelting. These "well-meaning" programs include:

- The Forest Service Organic Act of 1897
- The Forest and Rangeland Renewable Resources Planning Act of 1974
- National Forest Management Act of 1976
- The Federal Land Policy and Management Act
- Reclamation Act of 1902
- Wilderness Act
- Wild and Scenic Rivers Act
- National Trails System Act
- Coastal Zone Management Act
- Protection of Wetlands, Executive Order
- National Wildlife Refuge System Administration Act of 1966
- Endangered Species Act
- Fish and Wildlife Coordination Act
- The Antiquities Act of 1906
- Archeological and Historic Preservation Act
- National Historic Preservation Act of 1966
- Alaska Native Claims Settlement Act of 1971
- National Environmental Policy Act of 1969
- Clean Air Act
- Federal Water Pollution Control Act
- Clean Water Act Amendments of 1977
- Safe Drinking Water Act
- Federal Resources Conservation and Recovery Act
- Noise Control Act of 1972
- Toxic Substances Control Act
- Uranium Mill Tailings Radiation Control Act of 1978

It is recognized that some of the foregoing legislation has been enacted to preserve the well-being of our citizens. However, we believe that, in concert with a host of state and local laws and ordinances, mining activities are unnecessarily restricted. In addition, there are other Federal wilderness identification programs which deny yet unnamed lands for exploration and mining.

It's no wonder that the American Institute of Professional Geologists says the U.S. mining industry "is an object of derision and scorn, subject to increasingly burdensome taxation, strangled by the duplicative networks of state and Federal regulations, and constantly harassed by the preservationist movement," They decry "the headstrong rush to preserve and protect everything except the well-being of the U.S. citizen."

The effect of government action is to escalate the cost of mining and smelting, lower the tonnage of minerals produced domestically, permanently close down segments of our mining industry, and again, increase America's dependence on overseas nations.

Zinc experts claim that Federal laws have increased their production costs 25% and report 9 of 14 U.S. smelters closed in the last decade. Copper authorities foresee a $3 billion outlay to meet 1985 environmental, health and safety requirements now on the books. This would reduce domestic copper production 17%, they state. Lead experts say that most producers can not meet OSHA exposure standards and therefore expect the disappearance of our secondary lead industry.

Copper, lead and zinc producers claim they cannot afford to meet increasingly stringent state and federal rules and are turning to Japan and Germany to smelt and refine their metals.[85]

Concerning mining, government obstacles have lengthened the time of bringing a mine into production...now eight years are required for an underground mine and seven years for an open pit mine. Looking ahead, that time span will grow to 12 years, from initial survey to a mine operating at rated capacity.

As a point of reference, Canadian mines can be brought on stream in 4 1/2 years vs. the foregoing American time period of 7 years. Supportive government actions account for the difference.

In summary, to maintain an adequate future supply of domestically-mined metals, U.S. industry needs access to ore deposits and encouragement to extract and refine them NOW. The importance of knowing the extent of our national resources through exploration cannot be overemphasized. Should a national emergency arise, 6 to 12 years needed to deliver a new mineral source will be too late!

## IV. ADCI RECOMMENDATIONS

Recognizing the seriousness of America's Strategic Minerals and Metals Crisis, the American Die Casting Institute outlines the following course of action for our Government and people:

### A ACKNOWLEDGE THE STRATEGIC MINERALS AND METALS CRISIS

The President of the United States, Cabinet Departments, Regulatory Agencies and Congress must recognize the seriousness of the Strategic Minerals and Metals Crisis. Appropriate legislative and executive actions should be taken to lessen America's dependence on foreign sources of vital materials. Public support should be obtained through Presidential speeches, press conference and Congressional hearings. Views of the public should be obtained through appropriate Congressional and regulatory hearings.

### B. IMPLEMENT THE MINING AND MINERALS POLICY ACT OF 1970

1. Charter a healthy mining industry able to supply the maximum domestic capacity of minerals.

2. Render Federal pollution and environmental laws reasonably consistent with this Act.

3. Appoint a Coordinator of Minerals Management (Cabinet level?). Consolidate the following existing Government functions under one Agency:

   - Bureau of Mines
   - Stockpile Management
   - Geologic Survey
   - Federal Emergency Materials Act

### C. IMPLEMENT THE NATIONAL MATERIALS AND MINERALS POLICY AND DEVELOPMENT ACT OF 1980

1. Submit a definitive Presidential plan before the end of 1981 for resolution of Strategic Minerals and Metals Crisis, as required by the Act.

2. Establish a strong U.S. Minerals and Metals Policy.

3. Coordinate all Federal materials programs and appropriate research and development activities.

4. Implement the Mining and Minerals Policy Act of 1970.

5. Appoint a coordinator of Minerals Management [cabinet level?]. Consolidate the following existing government functions under one agency:

   - Bureau of Mines
   - Stockpile Management
   - Geologic Survey
   - Federal Emergency Materials Agency

6. Expand the Bureau of Mines data base from domestic information to world information on mineral supplies and shipments.

7. Support U.S. industry to explore, mine, smelt and process more minerals domestically. Stimulate domestic production through added financial incentives, fewer environmental restraints, stockpile purchase programs and general encouragement of a healthy and fully-productive U.S. minerals and metals industry.

8. Expand domestic supply sources to minimize reliance upon heavily-imported strategic materials.

9. Move from an adversary to cooperative relationship between the U.S. Government and business, accompanied by less government response to environmentalist pressures.

## D. STRENGTHEN STRATEGIC MATERIAL STOCKPILES

1. Implement a program to review stockpile specifications (types of materials, grades, quantities) for strategic minerals and metals.

2. Implement a program to raise stockpile levels to meet those goals.

3. Sell excess, inferior and obsolescent quantities of certain materials to help fund new purchase requirements.

4. Verify that cobalt, chrome, zinc, aluminum and other strategic material stockpiles are at goal levels.

5. Ensure that industry requirements are considered with defense requirements when planning stockpile goals.

## E. REVIEW MINERAL ACCESS LEGISLATION TO INCREASE DOMESTIC MINING

1. Open mineral-rich Federal lands to exploration and mining (with reasonable requirements to limit pollution and restore landscapes).

2. Permit multiple use of public lands currently excluded from exploration and mining, recognizing that strategic mineral supply is equal in national interest to scenic vistas.

3. Limit further expansion of Wilderness Areas, so that exploration of high-potential mining sites is permitted.

## F. REVIEW ENVIRONMENTAL LEGISLATION AND REGULATIONS TO INCREASE DOMESTIC MINING, SMELTING AND SECONDARY RECOVERY

1. Minimize the impact of air and water pollution, OSHA, and other requirements upon our national defense and mineral supply interests.

2. Apply cost-benefit analyses to all environmental regulations.

3. Submit environmental regulations to peer review by the scientific community.

4. Seek "general" environmental benefits rather than debilitating "total" benefits.

5. Temper the authority of environmental agencies regarding land-use planning.

6. Foster a climate of government-industry cooperation, rather than confrontation.

7. Require regulatory agencies to consider alternative programs for the selection of options that achieve their general goals with the least burden on industry.

8. Permit legislative or judicial review of regulations.

9. Temper environmental regulations applicable to mineral smelting and refining companies so that benefits balance implementation costs.

## G. REVISE TAX CODES TO ENCOURAGE BUSINESS INVESTMENT

1. Increase investment tax credits to stimulate replacement of older equipment and additions of productivity-increasing machinery.

2. Provide investment incentives or financial assistance programs to offset costs of non-productive environmental, health and safety equipment.

3. Liberalize depreciation schedules to permit faster and more realistic recovery of invested capital.

4. Provide capital investment subsidies for construction of energy-efficient plant and equipment.

5. End double taxation of dividends, to spur shareholder investment.

## H. REVIEW FOREIGN POLICY POSITIONS

1. Establish American foreign policies which recognize defense and national security considerations in relation to the continued supply of strategic materials.

2. Maintain realistic relationships with strategic mineral-rich nations.

3. Encourage important underdeveloped nations to seek friendly relations with the U.S. and discourage them from seeking ties with the Soviet Union.

4. Foster close relations with Canada and Mexico to increase business, social, and economic ties.

5. Challenge Soviet expansion efforts (especially in strategic mineral-rich Africa and Central America).

6. Strengthen U.S. military capabilities and the merchant marine fleet to support State Department initiatives.

## I. CONTROL STRATEGIC MATERIAL EXPORTS

1. Place strict controls or limitations on the export of secondary aluminum scrap.

2. Control export of chrome, or stainless steel scrap (which contains chrome).

## J. DEVELOP ADDITIONAL MINERAL AND METAL RESOURCES

1. Establish economic incentives to expand ocean mining of strategic minerals.

2. Establish economic incentives to maximize the use of technology for the recovery and recycling from scrap of strategic materials.

## ADCI CONCLUSIONS

The American Die Casting Institute firmly believes that implementation of the foregoing recommendations will lessen the Strategic Minerals and Metals Crisis, will stimulate the economy, will contribute towards full employment, will enhance our defense preparedness, and will best serve the interests of our nation.

## APPENDIX . . . FOOTNOTES

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NOTE:

As supplementary reading for this Position Paper, it is recommended that reference be made to "METALS", issued by the Colorado Section of the American Institute of Professional Geologists.

Copies of this publication may be obtained for $2.50, including postage, by writing to Mr. Ed Warren, Editor, Colorado Communicator, P.O. Box 2166, Evergreen, CO 80439. Published September, 1980.

The CHAIRMAN. Thank you very much, Mr. Schneier.

Mr. Harr.

## STATEMENT OF DR. KARL G. HARR, JR., PRESIDENT, AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.

Dr. HARR. Thank you, Mr. Chairman. I, too, will summarize my statement.

I would like to start off by saying I couldn't agree more with the statement you just made at the end of the last hearing about the essential need for all of us who are concerned to have a wider audience and a higher degree of national concern about the problem.

I am president of a trade association which represents the Nation's major manufacturers of aircraft, aircraft engines, spacecraft, missiles, and related high-technology components and equipment, so we are perhaps distinguished from the other witnesses who have appeared before this committee, including Mr. Schneier.

We are end users of the materials that are under consideration here, and the cost to us and the Nation of not having availability of these materials is not only the loss of jobs and income and so forth that are involved, but it means the Nation doesn't get the product, which is the concern particularly from the national defense point of view but also from a commercial point of view because the export of transport aircraft is a very large dollar earner in the trade balance and jobs in this country, so when we talk about the vulnerability of the United States to acquisition of these critical and strategic materials, that is what we are talking about.

Several of them are essential to the high performance aircraft, high performance aircraft engines which you will hear in more detail from Ms. La Drew of Pratt and Whitney, but we couldn't make them without the availability of some of these materials.

A few benchmarks to my remarks—the industry is in good shape. We are still the world leaders in high technology. We are the leading exporter among American manufacturing industries. We have experienced some downturns in the last couple of years due to the lagging world market that has affected the airlines' financial status—and they are one of our principal customers—and also due to heightened foreign competition in recent years. We have all the competitive problems that other witnesses have testified about here this morning, and we have testified before other committees of the Senate and the House as to the need for aggressive programs, but in my testimony today I would like to direct myself specifically to the defense stockpile management and condition because as I have gone through the testimony of prior witnesses and your statements, Senator McClure, and others, it strikes me that there is no great mystery or no great disagreement on the essential facts among any of us.

We have voluminous testimony. We are all pretty agreed to the geopolitics of the situation—where the countries are that produce the critical materials, the resources, those critical resources, critical materials, how shaky their governments are, what the sea lane vulnerability is, and so forth, and the record is voluminous in those respects; the vital necessity of the materials to certain aspects of American industry, both for domestic and defense and commercial purposes, the high degree of dependency that is involved in that, the history of the stockpile—no great disagreement.

The various phases that management has gone through in the years from its initiation prior to World War II, the sad shape of the stockpile in terms of volume, in terms of plans for the future, in terms of the degree of some of the materials stored there and some of the factors contributing to that are substantially agreed to, and some of the key reasons for that state of affairs seem again to be subject to general consensus, so the situation seems to be that those who care, in which I include this committee, and certainly all the witnesses who have appeared before you and many others, those who care aren't in charge, and those who are in charge don't care or don't care enough. That is a little unfair.

The DOE clearly doesn't want the job, and it has very honestly and amicably said if it got the task, it would treat it like an orphan I am afraid. The needs of the stockpile I can't see ever standing up to the need for new programs of high performance equipment.

GSA wants the responsibility but they don't show wherein things would get any better under the existing arrangement than they are now, and I think we are agreed that that isn't very good.

An independent commission is like a night-blooming orchid, the roots in the air, and it can be very loaded with talent but if it isn't plugged into the system, it isn't going to change things, so I think the answer lies with giving the agency chosen, any agency, the authority and the responsibility and the responsibility and the authority to do the whole job.

When we go back to the National Security Resources Board and the ODM and all the things that followed down the chain in the earlier days, that worked for a while. It worked pretty well for a while, and the reason it worked, it had the required joint commitment of Congress and the President, and I just really feel that searching for the answer here requires that same kind of joint commitment, and I have not read a lot of stuff in my report because everyone else has said pretty much the same thing.

[The prepared statement of Dr. Harr follows:]

# STATEMENT OF
# AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.
# CONCERNING THE GEOPOLITICAL IMPLICATIONS OF STRATEGIC AND CRITICAL MATERIALS
# BEFORE THE
# COMMITTEE ON ENERGY AND NATURAL RESOURCES
# UNITED STATES SENATE

June 20, 1983

Mr. Chairman and Members of the Committee:

I am Karl G. Harr, Jr., president of the Aerospace Industries Association of America, Inc. (AIA), the trade association representing the nation's major manufacturers of aircraft, aircraft engines, spacecraft, missiles and related high technology components and equipment. We appreciate the opportunity to appear before the Committee to discuss the geopolitical implications of strategic and critical materials availability.

Generally speaking, the U. S. aerospace industry is healthy, vigorous and well-positioned for the future. While challenges have emerged on several fronts, the industry remains the leader in world technology, and nationally, the leading exporter among manufacturing industries.

In relative terms, however, the industry has been experiencing a phase of reduced activity. This has not been unexpected, as this industry has always been particularly sensitive to fluctuations and changes in national attitudes, policies and economic conditions. We can measure the principal cause of this decline -- the world recession -- with some accuracy. However, a secondary cause -- increasingly effective foreign competition -- is more difficult to quantify, and hence, more troublesome.

While total 1982 sales amounted to $63.3 billion, this was down $200 million from 1981 sales -- an inflation-adjusted decline of 6.7 percent, largely due to the reduction in sales of civil aircraft. The world's airlines have been particularly hard-hit by the recession, and the aerospace industry has felt the reverberations. In turn, this meant a drop in aerospace exports. Combined with a slight increase in imports -- mostly in the category of general aviation aircraft -- the aerospace balance of trade dropped to $10.7 billion in 1982, a $2.4 billion decline after four previous record-setting years. Nevertheless, aerospace exports represented a very significant contribution to the overall 1982 U. S. trade balance, which again ran a large deficit.

Looking to a brightening picture, backlog -- orders on the industry's books at the end of 1982 -- amounted to $95.3 billion, a gain of approximately $1 billion from 1981. And the common thread running through previous statistics indicating decline in overall sales and exports concerns the decreased sales of civil transports -- a direct consequence of the financial difficulties of the world airlines, as they struggle with the impact of global recession. As we know, this is a temporary dislocation, and not a trend, and the industry is poised for improved performance in the coming years. But economic recovery will not in and of itself guarantee security for our industry, or the nation as a whole -- a fact that this Committee has acknowledged by calling these hearings.

As suppliers of both commercial and military products which incorporate significant quantities of strategic and critical materials, AIA's member companies are acutely aware of U. S. dependency on foreign sources for a number of these vital materials. As previous witnesses have pointed out, the U. S. has virtually no primary production of chromium, cobalt, columbium, manganese, platinum group metals, tantalum and titanium -- all of which are integral to the manufacture of aircraft. In the case of jet engine production, which the representative of Pratt & Whitney will discuss in more detail, commercial and military performance specifications for these end products dictate the use of materials possessing properties that yield lightweight engines able to withstand extreme temperatures, while providing high speeds and fuel efficiency. Chromium, cobalt and titanium are among those materials which deliver these crucial characteristics.

In the absence of domestic production of the aforementioned materials that are key components in aerospace products, the U. S. has relied on imports in quantities of 90 percent or more. This degree of foreign source dependency, disturbing in and of itself, is particularly alarming when one assesses the handful of countries in possession of these resources. Unfortunately for the United States, a number of these countries are neither economically nor politically stable, and this unpredictability poses a constant threat of foreign supply interruption, escalating prices, or potentially, an outright cutoff of particular supplies. The volatile conditions which characterize such producer nations exacerbate U. S. vulnerability to supply disruptions, which would not necessarily be limited to times of war when normal sea and air traffic would be jeopardized, but also in times of "peace", in the event of economic embargoes, cartel actions or civil strife.

The forced cutback in cobalt imports from Zaire in the late 1970's, as a consequence of a civil war, may well have been a decisive turning point for both the aerospace and other industries dependent upon this material. The abrupt constriction of this major foreign source of cobalt, coming on the heels of a reduction in the level of cobalt sales from the National Defense Stockpile, resulted in soaring prices, drawn-out lead times and spot shortages.

These aftershocks drove home the reality of U. S. foreign source dependency for critical and strategic materials, as opposed to the simple awareness of the problem. While the U. S. has not been short on concern for the dangers implicit in this degree of reliance on foreign availability -- indeed, governmental agency studies on material and mineral policy date back to Theodore Roosevelt's Administration -- an adequate, positive response to the issues raised in almost all these analyses has yet to be formulated. The 1978-1979 cobalt scare irrefutably demonstrated the imperative and immediate need for the United States to develop and implement a carefully thought-out, integrated materials policy to achieve and maintain a sufficient and stable supply of important critical and strategic materials. It is discouraging to realize that five years later we are still discussing the urgency for such a policy, as opposed to reviewing the milestones of a policy presently in place. And it has been 30 years since the Paley Commission, appointed by President Truman, emphasized the importance of ". . . a mechanism for looking at the problem as a whole, for keeping track of changing situations and the interrelation of programs and policies."

Although a comprehensive and coordinated policy addressing the problem of U. S. vulnerability to foreign supply disruption remains an elusive goal, the U. S. government has taken several constructive actions in recent years. Enactment of the Idaho Wilderness legislation in 1980 included an unprecedented provision setting aside a small area of the River of No Return Wilderness, and designating cobalt mining as the dominant use for that area. In 1981, the Reagan Administration purchased 5.1 million pounds of cobalt for the National Defense Stockpile; the quality of this cobalt is consistent with current industry standards. And in 1982, President Reagan's submission of the National Materials and Minerals Program Plan and Report to Congress represented a significant step forward in the nation's approach to the materials issue by identifying problems and actions necessary to reduce U. S. vulnerability.

While the 1982 Plan lacked an adequate description of the manner in which the recommended actions were to be carried out and failed to address certain aspects --

notably, the need for organizational reform of the stockpile -- that are integral to a truly comprehensive materials policy, it did set out certain important cornerstones with regard to domestic sources of materials, the development of substitutes and the maintenance of the National Defense Stockpile.

Putting aside the noted shortcomings of the Administration's policy statement, the aerospace industry endorses this three-pronged strategy to reduce U. S. vulnerability to foreign supply disruptions of critical and strategic materials, and to ensure that the U. S. will continue to have adequate supplies of the materials necessary to support the economy and national security. The key to decreasing U. S. import reliance is the identification of and access to alternative sources and alternative materials. While the ideal solution would be to turn to domestic sources to supply U. S. needs, geological constraints, production costs and market conditions render it unlikely that the U. S. will ever become self-sufficient in all strategic and critical materials.

However, incentives for production of known domestic deposits of strategic and critical materials must be developed. Title III of the Defense Production Act grants the government the authority to establish a wide range of programs -- including loan guarantees and purchase commitments -- which would provide sorely needed financial incentives for the domestic mining industry.

Closely related to the strategy of encouraging production of domestic sources of certain materials is the need to improve the quality of stockpiled materials, and to restructure the stockpile itself. Again, while the President's 1982 Materials and Minerals Program Plan took positive steps insofar as initiating an examination of the quality of the current stockpile inventory, mandating reviews of the inventory procedures now in use and switching to a five-year assessment of potential acquisitions and disposals, it fails to address the crux of the stockpile problem -- the presently disjointed and dysfunctional organizational structure.

The division of stockpile policy and operational responsibilities between the General Services Administration (GSA) and the Federal Emergency Management Agency (FEMA), coupled with the roles played by the Departments of Commerce, Defense, Interior and State have prevented effective, coordinated management of the stockpile's resources.

Until the stockpile's organizational flaws are corrected, the associated problems of material quality and quantity will persist. For this reason, the aerospace industry supports the consolidation of the operational and policy responsibilities within one organization. It would be preferable to place this combined authority within an independent agency constituted along the lines of the Federal Reserve Board, but in the absence of a Congressional consensus to establish a new entity, the unified authority should be transferred to a single existing agency. Such organizational revamping must be accompanied by a commitment to resist external economic, political or budgetary considerations in stockpile management and utilization decisions. It will also be important to retain the independent status of the Stockpile Transaction Fund, assuring that the receipts from stockpile sales be dedicated to future stockpile purchases, only.

One last observation about stockpile reform: Whether Congress chooses to create a new organizational structure to manage the stockpile or simply consolidates the currently dispersed responsibilities within an existing agency, the aerospace industry urges that recognition be given to the importance of the civilian and industrial components of our national defense base. The legitimate industrial and essential civilian needs for access to particular critical and strategic materials must be protected, and consequently, stockpile releases to meet these sectors' requirements must be guaranteed in the event of foreign supply disruptions, economic embargoes or cartel actions.

The third and final prong of a national strategy to increase U. S. self-sufficiency with respect to some materials involves reducing the extent to which certain critical and strategic materials are used, through the development of substitutes and improved manufacturing techniques. This segment of a national policy will require a long-term, intensive R&D effort, which many of AIA's member companies are already engaged in. Again, I believe that Pratt & Whitney's representative will discuss this in more detail.

Mr. Chairman, we are encouraged by the extent of the commitment which the Reagan Administration has brought to the task of formulating a coordinated, long-term national materials and minerals policy. But we do remain concerned about the amount of time that may yet pass before an effective policy will be put in place. We have been living on borrowed time at best -- a totally unacceptable situation in view of the implications for our national security. It is clear that any comprehensive policy that ultimately achieves the objective of reducing U. S. vulnerability to foreign imports of critical and strategic materials must be a policy that is a product of private and public sector cooperation, and the aerospace industry stands ready to continue participating in that process.

That concludes my remarks, Mr. Chairman, and I will now be glad to address any questions.

The CHAIRMAN. Thank you very much.

Ms. La Drew.

## STATEMENT OF JUDITH A. LA DREW, WASHINGTON REPRESENTATIVE, UNITED TECHNOLOGIES CORP., PRATT & WHITNEY

Ms. LA DREW. My name is Judith La Drew. I am the Washington representative of Pratt & Whitney, a division of United Technologies.

United Technologies welcomes this opportunity to express its views as a consumer and user of strategic and critical materials, and hopes that the information provided during this series of oversight hearings will be useful to the Senate Energy and Natural Resources Committee in its future deliberations on strategic materials legislation.

As a user of strategic and critical materials, United Technologies would like to focus its comments primarily today on the industry and Government actions necessary to reduce our vulnerability to foreign supply disruption. Significant quantities of strategic and critical materials are used in manufacturing the commercial and military high technology products of United Technologies Corp. such as our Pratt & Whitney jet engines, Sikorsky helicopters, Otis elevators, Carrier air conditioners, and Mostek semiconductors. Without materials such as chromium, cobalt, copper, columbium, nickel, aluminum, tantalum, gold, silver, and platinum, we would not be able to keep the production lines running, and neither would many other U. S. high technology manufacturers.

For the most part, United Technologies buys semifinished parts, components and subsystems and rarely buys raw materials directly. We are several steps, therefore, removed from the original materials suppliers. It took a civil war in Zaire to make us directly and acutely aware of our vulnerability to materials supply disruption. The cobalt scare of the seventies, for example, has been discussed in great detail by previous witnesses. Today the price of cobalt has dropped back to $6 a pound and lead times have been substantially reduced.

It would be a costly error, however, for us to become complacent and to assume that the minerals problem has been solved. If anything, the Zaire cobalt example should serve to demonstrate how volatile the situation is and how quickly conditions could be reversed.

Important progress has been made on several aspects of materials policy in the last several years, but a great deal more needs to be done. I would like first to briefly explain why these materials are important to our national defense and to United Technologies as manufacturers of high technology products.

A typical fighter engine weighs about 3,000 pounds, but it requires some 13,000 pounds of raw materials during the melting, casting, forging, machining, grinding and polishing processes of its production life. One F-100 engine requires more than 5,000 pounds of nickel, 5,000 pounds of titanium, about 1,600 pounds of chromium, 900 pounds of cobalt, and close to 200 pounds of columbium. The cost of these raw materials is only a small percentage of the cost of building an engine, and so the real issue for us is the availability of strategic and critical materials, not the affordability question. Today's high performance engines simply cannot be built without them.

The aerospace industry has taken a number of initiatives to reduce requirements for strategic and critical materials. Substitution, for example, is one of the first actions taken by cobalt consumers faced with uncertain supplies, rapidly escalating prices, and extended leadtimes. Pratt & Whitney through advanced engineering was able to substitute another material for cobalt in turbine engine blades for its J-57 engines. In the past these blades have been made of an alloy which contained 56 percent cobalt. The substitute material which had been proven in service in similar engines contained no cobalt. Some 65,000 pounds of cobalt were saved by this change alone in just one manufacturing order at the height of the cobalt shortage.

Significant reductions in the amount of material required to produce a part have been achieved through the development of a variety of advanced manufacturing techniques. One recent manufacturing development near net shape processing in which forgings are produced closer to their final required shapes, thus reducing the amount of valuable material machined away. Large precision castings are isostatically hot pressed, producing results which essentially match conventionally forged and welded structures but which can save 60 percent or more of the input weight of material.

Even in the best near net shapping process available today, a significant portion of the material is machined away. These chips have the same chemistry as the completed part and with proper handling can be recycled. Through careful segregation, cleaning and crushing, it is now possible to recover and recycle 65 percent of the IN 100 chips produced in disk machining. Since our internal recycling program began in 1979, almost 1 million pounds of IN 100 material have been recycled.

Overall, Pratt & Whitney has been able to reduce its cobalt requirements by about 20 percent through substitution, conservation, and improved manufacturing techniques. Further benefits and reductions in cobalt usage, however, will require new technology and continued research and development initiatives.

As a corporation, United Technologies devoted $834 million to research and development efforts last year, including materials R&D. According to the 1983 Business Week survey of research and development spending by 776 firms, United Technologies spent more funds on R&D in 1982 than any other aerospace company, and ranked sixth in total spending among all firms surveyed.

Our search for technological solutions to the materials problem will continue, but other strategies and responsibilities more properly belong to the Federal Government. For example, we believe the Federal Government should encourage production of strategic and critical materials and also reform the national defense stockpile. Actions to encourage domestic production or reform stockpile management cannot be examined, however, or implemented in isolation. Neither are the two strategies mutually exclusive. Indeed they are interrelated and necessary if we are to reduce our vulnerability to supply disruption.

It is also the Federal Government's responsibility to insure that public land policies balance the legitimate environmental concerns with the need to develop domestic reserves of strategic and critical materials. We applaud these congressional efforts which address this concern such as the Idaho wilderness legislation and providing the California wilderness bill now pending before the Senate which would permit cobalt development in the northern California deposit.

Alternative sources must be sought if we are to reduce the risk of foreign supply interruption. Ideally we should look to domestic sources to supply our needs. However, realistically we know that with today's geological considerations, production costs, and market conditions, we could never become self-sufficient in all materials. The dramatic shifts in market prices and changing economic conditions make it difficult for domestic mines to gain the financial backing to make the required large, long-term investments. Title III of the Defense Production Act of 1950 contains a wide range of authority for programs, including loan guarantees and purchase commitments.

We support the use of DPA Title III as an effective means of encouraging domestic production and believe that the mining companies in consultation with the appropriate Government agencies and the Congress are in the best position to determine the form of Government assistance best suited to the needs of each project and the national interest.

We also support the following principles of stockpile reform—No. 1, the stockpile's day-to-day activities and long-term management responsibilities should be consolidated within one Federal agency.

Two, centralized stockpile authority must be isolated to the maximum extent possible from economic, budgetary, and political pressures.

Three, the national defense stockpile should be used for national defense purposes only as mandated by the current statute, and should not be used for economic or budgetary purposes.

Four, there is an industrial and civilian infrastructure essential to national defense which must be safeguarded in any restructuring of the stockpile organization or management reform.

Five, supply disruptions in a foreign producer nation, economic embargos, or cartel action should be grounds for triggering stockpile releases.

Six, funding for stockpile acquisitions should come from the stockpile transaction fund which should retain its independent status and continue as a revolving fund.

In summary, we believe that industry and Government cooperation is essential if we are to solve our materials problem. Our strategy to reduce this Nation's vulnerability to strategic and critical materials supply disruption must include research and development efforts, encouragement of domestic production where feasible, and reform of the national defense stockpile.

This three-pronged program is essential to insure that the United States has adequate supplies of materials necessary to build defense-related equipment and maintain its defense industrial base.

Thank you. That concludes my statement.

[The prepared statement of Ms. La Drew follows:]

# STATEMENT OF
# UNITED TECHNOLOGIES CORPORATION
# PRATT & WHITNEY

JUNE 20, 1983

ON
STRATEGIC AND CRITICAL MATERIALS

BEFORE
THE COMMITTEE ON ENERGY AND NATURAL RESOURCES
OF THE UNITED STATES SENATE

JUDITH A. LA DREW
WASHINGTON REPRESENTATIVE

SIGNIFICANT QUANTITIES OF STRATEGIC AND CRITICAL MATERIALS ARE USED IN MANUFACTURING THE COMMERCIAL AND MILITARY HIGH TECHNOLOGY PRODUCTS OF UNITED TECHNOLOGIES CORPORATION -- SUCH AS OUR PRATT & WHITNEY JET ENGINES, SIKORSKY HELICOPTERS, OTIS ELEVATORS, CARRIER AIR CONDITIONERS AND MOSTEK SEMI-CONDUCTORS. WITHOUT MATERIALS SUCH AS CHROMIUM, COBALT, COPPER, COLUMBIUM, NICKEL, ALUMINUM, TANTALUM, GOLD, SILVER AND PLATINUM, WE WOULD NOT BE ABLE TO KEEP THE PRODUCTION LINES RUNNING. AND NEITHER WOULD MANY OTHER U.S. HIGH-TECHNOLOGY MANUFACTURERS.

FOR THE MOST PART, WE BUY SEMI-FINISHED PARTS, COMPONENTS AND SUB-SYSTEMS AND RARELY BUY RAW MATERIALS DIRECTLY. WE ARE SEVERAL STEPS REMOVED FROM THE ORIGINAL MATERIALS SUPPLIERS. IT TOOK A CIVIL WAR IN ZAIRE TO MAKE US DIRECTLY AND ACUTELY AWARE OF OUR VULNERABILITY TO MATERIALS SUPPLY DISRUPTION.

IN 1978-79 OUR SUPPLIERS WERE PLACED ON A 70 PERCENT COBALT ALLOCATION BY THEIR ZAIRIAN SOURCES, CAUSING REVERBERATIONS THROUGHOUT THE MANY INDUSTRIES WHICH PROCESS AND USE THIS MATERIAL. ALTHOUGH ZAIRE WAS ABLE TO MAINTAIN ITS OUTPUT DURING THE PERIOD, SCARCE INFORMATION REGARDING THE SITUATION IN ZAIRE, CONCERN OVER THE ANNOUNCED 30 PERCENT CUTBACK, AND VIGOROUS DEMAND FOR AEROSPACE PRODUCTS LED TO INCREASED LEAD TIMES, ESCALATED PRICES AND SPOT SHORTAGES.

THE SITUATION IN ZAIRE WAS COMPOUNDED BY THE FACT THAT THE NATIONAL DEFENSE STOCKPILE, WHICH FROM 1967 TO 1977 SUPPLIED AN AVERAGE OF 30 PERCENT OF THE UNITED STATES ANNUAL REQUIREMENTS, ABRUPTLY CURTAILED STOCKPILE SALES OF COBALT IN 1977. THUS, A 30 PERCENT CUTBACK IN DOMESTIC SUPPLIES WAS AGGRAVATED BY A 30 PERCENT DROP IN FOREIGN SUPPLY BETWEEN 1977 AND 1979. NO WONDER THE PRICE OF COBALT ROSE FROM $6 A POUND TO $25 A POUND IN THIS SHORT PERIOD, AND LEAD TIMES FOR COBALT CASTINGS INCREASED FROM 22 WEEKS TO 65 WEEKS.

TODAY THE PRICE OF COBALT HAS DROPPED BACK TO ABOUT $6 A POUND AND LEAD TIMES HAVE BEEN REDUCED SUBSTANTIALLY. IT WOULD BE A COSTLY ERROR, THOUGH, FOR US TO BECOME COMPLACENT AND TO ASSUME THAT THE MINERALS PROBLEM HAS BEEN SOLVED. IF ANYTHING, THE ZAIRE COBALT EXAMPLE SHOULD SERVE TO DEMONSTRATE HOW VOLATILE THE SITUATION IS AND HOW QUICKLY CONDITIONS CAN BE REVERSED.

IMPORTANT PROGRESS HAS BEEN MADE ON SEVERAL ASPECTS OF MATERIALS POLICY SINCE THE COBALT SCARE OF THE 1970s, BUT A GREAT DEAL MORE NEEDS TO BE DONE. BEFORE DISCUSSING SOME OF THE INDUSTRY AND GOVERNMENT ACTIONS TAKEN IN THE PAST SEVERAL YEARS TO REDUCE OUR MINERALS DEPENDENCY, I'D LIKE TO EXPLAIN BRIEFLY WHY THESE MATERIALS ARE ESSENTIAL TO INDUSTRIAL USERS SUCH AS UNITED TECHNOLOGIES.

JET ENGINE MATERIALS HAVE EVOLVED TO VERY HIGH LEVELS OF STRENGTH, OXIDATION RESISTANCE AND LIGHTNESS, CONTRIBUTING TO THE ULTIMATE PERFORMANCE OF AIRCRAFT. COMMERCIAL AND MILITARY JET ENGINE SPECIFICATIONS DEMAND MATERIALS WITH PROPERTIES THAT ENABLE US TO BUILD LIGHTWEIGHT ENGINES SUBJECT TO TEMPERATURES EXCEEDING 2,000 DEGREES FAHRENHEIT AND CAPABLE OF HIGH SPEEDS, GREATER AIRCRAFT RANGE, BETTER FUEL EFFICIENCY AND QUICK ACCELERATION. SUCH PROPERTIES ARE PROVIDED BY STRATEGIC AND CRITICAL MATERIALS SUCH AS CHROMIUM, COBALT, TANTALUM AND TITANIUM.

FOR EXAMPLE, CHROMIUM IS VITAL TO CORROSION AND OXIDATION RESISTANCE; COBALT AND TANTALUM GIVE CREEP STRENGTH AND DUCTILITY; TITANIUM IS STRONG AND LIGHT. NEW ALLOYS OFFER POTENTIAL FOR CONTINUED PERFORMANCE IMPROVEMENTS. AND PERFORMANCE IMPROVEMENTS ARE NOT LUXURY OPTIONS. IN MILITARY AIRCRAFT THEY TRANSLATE INTO ACCELERATION, SPEED, RANGE, TURNING RADIUS -- IN A WORD, SURVIVABILITY.

ALTHOUGH A TYPICAL FIGHTER ENGINE WEIGHS ABOUT 3,000 POUNDS, IT REQUIRES SOME 13,000 POUNDS OF RAW MATERIALS DURING THE MELTING, CASTING, FORGING, MACHINING, GRINDING AND POLISHING PROCESSES DURING ITS PRODUCTION. ONE F100 ENGINE, FOR EXAMPLE, REQUIRES MORE THAN 5,000 POUNDS OF NICKEL, 5,000 POUNDS OF TITANIUM, ABOUT 1,600 POUNDS OF CHROMIUM, 900 POUNDS OF COBALT AND CLOSE TO 200 POUNDS OF COLUMBIUM. THE COST OF THESE RAW MATERIALS IS ONLY A SMALL PERCENTAGE OF THE COST OF BUILDING AN ENGINE. SO THE REAL ISSUE IS THE AVAILABILITY OF STRATEGIC AND CRITICAL MATERIALS. TODAY'S HIGH PERFORMANCE ENGINES CANNOT BE BUILT WITHOUT THEM.

THE AEROSPACE INDUSTRY HAS TAKEN INITIATIVES TO REDUCE REQUIREMENTS FOR STRATEGIC AND CRITICAL MATERIALS. SUBSTITUTION WAS ONE OF THE FIRST ACTIONS TAKEN BY COBALT CONSUMERS FACED WITH UNCERTAIN SUPPLIES, RAPIDLY ESCALATING PRICES AND EXTENDED LEAD TIMES.

FOR EXAMPLE, PRATT & WHITNEY THROUGH ADVANCED ENGINEERING WAS ABLE TO SUBSTITUTE ANOTHER MATERIAL FOR COBALT IN TURBINE BLADES FOR ITS J57 ENGINES. IN THE PAST, THESE BLADES HAD BEEN MADE OF AN ALLOY WHICH CONTAINED 56 PERCENT COBALT. THE SUBSTITUTE MATERIAL, WHICH HAD BEEN PROVEN IN SERVICE IN SIMILAR ENGINES, CONTAINED NO COBALT. SOME 65,000 POUNDS OF COBALT WERE SAVED BY THIS CHANGE IN JUST ONE MANUFACTURING ORDER AT THE HEIGHT OF THE COBALT SHORTAGE.

A MORE SIGNIFICANT REDUCTION IN COBALT CONSUMPTION FOR COMMERCIAL JT8D TURBINE DISKS RESULTED FROM THE SUBSTITUTION OF INCONEL-718 FOR WASPALOY$^{R}$. THIS SINGLE CHANGE REDUCED BY ALMOST ONE-THIRD THE COBALT REQUIRED IN THAT PARTICULAR ENGINE WHICH POWERS 727s, 737s, AND DC-9s.

THE CHANGE CARRIED WITH IT A SIGNIFICANT INCREASE IN THE USE OF COLUMBIUM -- STILL A STRATEGIC AND CRITICAL MATERIAL BUT LESS SENSITIVE THAN COBALT. SUBSTITUTES FOR COBALT ARE HARDER TO FIND FOR THE ADVANCED ENGINES NOW BEING DEVELOPED FOR FUTURE APPLICATIONS.

AVAILABILITY OF STRATEGIC AND CRITICAL MATERIALS HAS, IN FACT, BECOME A DESIGN FACTOR IN THE DEVELOPMENT OF NEXT GENERATION ENGINES. MUCH WORK HAS BEEN DONE TO REDUCE THE USE OF THESE MATERIALS WHEREVER POSSIBLE THROUGH SUBSTITUTION AND IMPROVED MANUFACTURING TECHNIQUES TO ENSURE THAT LESS MATERIAL IS LOST DURING PRODUCTION. IN ADDITION, EFFORTS ARE UNDER WAY TO CUT USAGE FURTHER THROUGH CONSERVATION, SCRAP RECLAMATION AND RECYCLING.

SIGNIFICANT REDUCTIONS IN THE AMOUNT OF MATERIAL REQUIRED TO PRODUCE A PART HAVE BEEN ACHIEVED THROUGH THE DEVELOPMENT OF A VARIETY OF ADVANCED MANUFACTURING TECHNIQUES. ONE SPECIAL FORGING PROCESS, CALLED GATORIZING$^{R}$, WAS DEVELOPED BY PRATT & WHITNEY TO PRODUCE TURBINE DISK FORGINGS FOR THE F100 ENGINE. IN GATORIZING$^{R}$, THE DIES AND THE INPUT MATERIAL ARE HEATED AND MAINTAINED AT THE CORRECT FORGING TEMPERATURE, PERMITTING THE FORMATION OF COMPLEX SHAPES WITH EXCELLENT DEFINITION AND REPEATABILITY.

THIS PATENTED PROCESS IS BEING APPLIED TO TITANIUM DISKS, PRODUCING REDUCTIONS OF NEARLY 50 PERCENT IN THE MATERIAL REQUIRED. DEVELOPMENT WORK IS CONTINUING AND A FURTHER REDUCTION OF 25 PERCENT IN INPUT WEIGHT SEEMS FEASIBLE.

ANOTHER RECENT MANUFACTURING DEVELOPMENT IS "NEAR NET" SHAPE PROCESSING IN WHICH FORGINGS ARE PRODUCED CLOSER TO THEIR FINAL REQUIRED SHAPES, REDUCING THE AMOUNT OF VALUABLE MATERIAL MACHINED AWAY. LARGE PRECISION CASTINGS ARE ISOSTATICALLY HOT PRESSED, PRODUCING RESULTS WHICH ESSENTIALLY MATCH CONVENTIONALLY-FORGED AND WELDED STRUCTURES BUT WHICH CAN SAVE 60 PERCENT OR MORE INPUT WEIGHT OF MATERIAL.

EVEN IN THE BEST "NEAR NET" SHAPING PROCESS AVAILABLE TODAY, A SIGNIFICANT PORTION OF THE MATERIAL IS MACHINED AWAY. THESE CHIPS HAVE THE SAME CHEMISTRY AS THE COMPLETED PART AND WITH PROPER HANDLING CAN BE RECYCLED.

THROUGH CAREFUL SEGRAGATION, CLEANING AND CRUSHING, IT IS NOW POSSIBLE TO RECOVER AND RECYCLE 65 PERCENT OF THE IN 100 CHIPS PRODUCED IN DISK MACHINING. SINCE OUR INTERNAL RECYCLING PROGRAM BEGAN IN 1979, ALMOST ONE MILLION POUNDS OF IN 100 MATERIAL HAVE BEEN RECYCLED.

OVERALL, PRATT & WHITNEY HAS BEEN ABLE TO REDUCE ITS COBALT REQUIREMENTS BY ABOUT 20 PERCENT THROUGH SUBSTITUTION, CONSERVATION, AND IMPROVED MANUFACTURING TECHNIQUES.

FURTHER BENEFITS AND REDUCTIONS IN COBALT USAGE, HOWEVER, WILL REQUIRE NEW TECHNOLOGY. AS A CORPORATION, UTC DEVOTED $834 MILLION TO RESEARCH AND DEVELOPMENT EFFORTS LAST YEAR, INCLUDING MATERIALS R&D EFFORTS.

OUR SEARCH FOR TECHNOLOGICAL SOLUTIONS TO THE MATERIALS PROBLEM WILL CONTINUE, BUT OTHER STRATEGIES AND RESPONSIBILITIES ARE MORE PROPERLY THE FEDERAL GOVERNMENT'S RESPONSIBILITY. FOR EXAMPLE, THE GOVERNMENT SHOULD ENCOURAGE DOMESTIC PRODUCTION OF STRATEGIC AND CRITICAL MATERIALS AND REFORM THE NATIONAL DEFENSE STOCKPILE.

ACTIONS TO ENCOURAGE DOMESTIC PRODUCTION OR REFORM STOCKPILE MANAGEMENT CANNOT BE EXAMINED OR IMPLEMENTED IN ISOLATION. NEITHER ARE THE TWO STRATEGIES MUTUALLY EXCLUSIVE. INDEED, THEY ARE INTERRELATED AND NECESSARY IF WE ARE TO REDUCE OUR VULNERABILITY TO SUPPLY DISRUPTION.

PERHAPS THE FOLLOWING EXAMPLES WILL HELP TO SHOW THE NEED FOR MINERALS POLICIES WHICH BALANCE THESE TWO OPTIONS AND SHOW HOW STOCKPILE AND DOMESTIC PRODUCTION ACTIVITIES AFFECT EACH OTHER:

1. THE NATIONAL DEFENSE STOCKPILE IS REQUIRED TO CONTAIN A THREE-YEAR SUPPLY OF STRATEGIC AND CRITICAL MATERIALS. FOR EVERY POUND OF STRATEGIC AND CRITICAL MATERIAL PRODUCED DOMESTICALLY WE REDUCE OUR STOCKPILE REQUIREMENTS BY THREE POUNDS.

2. AN ANALYSIS OF CURRENT STOCKPILE INVENTORIES AND GOALS SHOWS THAT THE U.S. WILL NEED TO SPEND OVER $6 BILLION AT TODAY'S PRICES TO MATCH STOCKPILE GOALS WITH INVENTORIES. DOMESTIC PRODUCTION, WHICH REDUCES STOCKPILE GOALS, WILL MEAN LESS MONEY SPENT ON NON-U.S.-PRODUCED SUPPLIES WITH RESULTING U.S. EMPLOYMENT TAX REVENUE AND BALANCE OF TRADE BENEFITS.
3. SHOULD OUR GOVERNMENT PROVIDE FINANCIAL INCENTIVES SUCH AS PURCHASE COMMITMENTS FOR DOMESTIC PRODUCTION OF STRATEGIC MATERIALS, RESULTING GOVERNMENT ACQUISITIONS WOULD MOST LIKELY BE TARGETED FOR INCLUSION IN THE NATIONAL DEFENSE STOCKPILE INVENTORY.
4. ENACTMENT OF STOCKPILE REFORM WOULD ENSURE THAT MATERIALS ACQUIRED BY THE NATIONAL DEFENSE STOCKPILE THROUGH PURCHASE COMMITMENTS OR OTHER MEANS WOULD NOT BE SUBJECT TO INEFFICIENT MANAGEMENT AND WOULD BE AVAILABLE TO MEET FUTURE NATIONAL DEFENSE NEEDS.

5. A NATIONAL DEFENSE STOCKPILE WITH BALANCED GOALS AND INVENTORIES, EFFECTIVE MANAGEMENT AND DOMESTIC MINERAL PRODUCTION WOULD PROVIDE LEVERAGE AGAINST FOREIGN CONTROL OF PRICING AND AVAILABILITY OF THESE ITEMS.

IT ALSO IS THE GOVERNMENT'S RESPONSIBILITY TO BE SURE THAT PUBLIC LAND POLICIES BALANCE THE LEGITIMATE ENVIRONMENTAL CONCERNS WITH THE NEED TO DEVELOP DOMESTIC RESERVES OF STRATEGIC AND CRITICAL MATERIALS. WE APPLAUD CONGRESSIONAL EFFORTS WHICH ADDRESSED THIS CONCERN IN THE 1980 IDAHO WILDERNESS LEGISLATION AND THE CALIFORNIA WILDERNESS BILL NOW BEFORE THE SENATE.

BUT ALTERNATIVE SOURCES MUST BE SOUGHT IF WE ARE TO REDUCE THE RISK OF FOREIGN SUPPLY INTERRUPTION. IDEALLY, WE SHOULD LOOK TO DOMESTIC SOURCES TO SUPPLY OUR NEEDS. REALISTICALLY, WE KNOW THAT WITH TODAY'S GEOLOGICAL CONSIDERATIONS, PRODUCTION COSTS AND MARKET CONDITIONS, WE COULD NEVER BECOME SELF-SUFFICIENT IN ALL MATERIALS.

THE DRAMATIC SHIFTS IN MARKET PRICES AND CHANGING ECONOMIC CONDITIONS MAKE IT DIFFICULT FOR DOMESTIC MINES TO GAIN THE FINANCIAL BACKING TO MAKE THE REQUIRED LARGE, LONG-TERM INVESTMENTS. TITLE III OF THE DEFENSE PRODUCTION ACT OF 1950 CONTAINS A WIDE RANGE OF AUTHORITY FOR PROGRAMS, INCLUDING LOAN GUARANTEES AND PURCHASE COMMITMENTS. WE SUPPORT THE USE OF DPA TITLE III AS AN EFFECTIVE MEANS OF ENCOURAGING DOMESTIC PRODUCTION AND BELIEVE THAT THE MINING COMPANIES -- IN CONSULTATION WITH APPROPRIATE GOVERNMENT AGENCIES -- ARE IN THE BEST POSITION TO DETERMINE THE FORM OF GOVERNMENT ASSISTANCE BEST SUITED TO THE NEEDS OF EACH PROJECT AND THE NATIONAL INTEREST.

WE ALSO SUPPORT THE FOLLOWING PRINCIPLES OF STOCKPILE REFORM:

1. THE STOCKPILE'S DAY-TO-DAY ACTIVITIES AND LONG-TERM MANAGEMENT RESPONSIBILITIES SHOULD BE CONSOLIDATED WITHIN ONE FEDERAL AGENCY.

2. CENTRALIZED STOCKPILE AUTHORITY MUST BE ISOLATED TO THE MAXIMUM EXTENT POSSIBLE FROM ECONOMIC, BUDGETARY AND POLITICAL PRESSURES.
3. THE NATIONAL DEFENSE STOCKPILE SHOULD BE USED FOR NATIONAL DEFENSE PURPOSES ONLY AS MANDATED BY THE CURRENT STATUTE AND SHOULD NOT BE USED FOR ECONOMIC OR BUDGETARY PURPOSES.
4. THERE IS AN INDUSTRIAL AND CIVILIAN INFRASTRUCTURE ESSENTIAL TO NATIONAL DEFENSE WHICH MUST BE SAFEGUARDED IN ANY RESTRUCTURING OF THE STOCKPILE ORGANIZATION OR MANAGEMENT REFORM.
5. SUPPLY DISRUPTIONS IN A FOREIGN PRODUCER NATION, ECONOMIC EMBARGOES OR CARTEL ACTION SHOULD BE GROUNDS FOR TRIGGERING STOCKPILE RELEASES.
6. FUNDING FOR STOCKPILE ACQUISITIONS SHOULD COME FROM THE STOCKPILE TRANSACTION FUND WHICH SHOULD RETAIN ITS INDEPENDENT STATUS AND CONTINUE AS A REVOLVING FUND.

IN SUMMARY, WE BELIEVE THAT INDUSTRY AND GOVERNMENT COOPERATION IS ESSENTIAL IF WE ARE TO SOLVE OUR MATERIALS PROBELM. OUR STRATEGY TO REDUCE THIS NATION'S VULNERABILITY TO STRATEGIC AND CRITICAL MATERIALS SUPPLY DISRUPTION MUST INCLUDE RESEARCH AND DEVELOPMENT EFFORTS, ENCOURAGEMENT OF DOMESTIC PRODUCTION WHERE FEASIBLE AND REFORM OF THE NATIONAL DEFENSE STOCKPILE. THIS THREE-PRONGED PROGRAM IS ESSENTIAL TO ENSURE THAT THE UNITED STATES HAS ADEQUATE SUPPLIES OF THE MATERIALS NECESSARY TO BUILD DEFENSE-RELATED EQUIPMENT AND MAINTAIN ITS DEFENSE INDUSTRIAL BASE.

# # # #

The Chairman. Thank you very much. You stated very clearly your belief that there should be a single agency which we should reorganize.

Mr. Schneier, would that parellel your view of what is needed?

Mr. **Schneier**. Yes, sir, I think so. We are of an opinion that should there be some type of a problem down the road for the United States, I don't think we are going to have a lot of time to develop from scratch mines or any of that sort of thing. If we don't have the strategic stockpile with these strategic minerals in it in sufficient quantity, I think we are going to be in big trouble.

The **Chairman**. I think there is a widely shared belief that reorganization is necessary. I would like to quote, however, from the statement made by Ambassador-at-Large Vernon Walters in testimony before us on May 19. He says, and I quote from his testimony:

> Reorganization is a tribal cyclical American fertility right. To my knowledge, it has never yet produced a healthy child, but the witch doctors who are engaged in this practice are highly regarded in our society.

I guess that is a pungent statement that reorganization is regarded as being helpful but isn't always helpful, so I assume that we need something in addition to just the ritual.

Dr. **Harr**. Mr. Chairman, I couldn't subscribe more to that statement. Reorganization for reorganization's sake is a way of copping out, and the essential elements that are needed here are a combination of responsibility and authority in the same place.

You could take the Bureau of Indian Affairs and give it to them. If you gave it enough Presidential backing and authority within the Government, they could do it. It doesn't matter how you do it. In the first instance when the Director of ODM, when ODM was still existing, he was a member of the National Security Council. He was right up there. Now if the GSA has a job and they get a RIF, they get an automatic across-the-board budget reduction demand put on them, it is going to be awful hard for stockpile procurements to stand up to personnel cuts, and it is perfectly understandable and it is understandable, too, that OMB, searching after a way to reduce the deficit, is going to look at every such activity, so it has to be insulated from those two things, and the only way it is going to happen in my opinion is if there is a wider audience, a higher degree of concern nationally as there was back in the late forties, fifties, where the President said yes, this is going to have a kind of priority, it needs to be insulated from that kind of pressure, and Congress backed it up.

The **Chairman**. There is one part of the testimony today toward which I want to direct particular attention. It was mentioned I think directly just once, and that was the degree to which economic changes occurring that have adverse effects both on consumers and producer industries may occur because of speculation in the marketplace.

Mr. Schneier, you made a reference to zinc. Most of our attention to stockpile requirements have attempted to reduce or eliminate economic motivation from the management of the stockpile.

If speculation is a major problem or even a large part of a problem at a given time, should we direct any attention toward the use of the stockpile dampening speculation?

Mr. SCHNEIER. Mr. Chairman, I don't believe that the die casting industry as concerned with prices as they are with supply. I don't think we would advocate the use of the supply, any strategic supply, for price dampening purposes at all. I don't think that is why we are advocating that there be a strategic stockpile.

The CHAIRMAN. You pointed to speculation but not from the standpoint of a need for governmental solution through the use of the stockpile?

Mr. SCHNEIER. We pointed it out for several reasons. The sources of zinc are from so-called friendly countries, and even though these countries are friendly to us, the material that we import from them, we are still subject to this hideous price escalating depression over a relatively short period of time. It is not only from the Third World or Communist nations that we are susceptible to pressures. We are susceptible in all areas when we are not self-sufficient.

The CHAIRMAN. Mr. Harr, do you have any comment?

Dr. HARR. Well, not specifically, sir; there has been use of the stockpile in the past to influence domestic prices such as rollback in feed price increases which I think is the wrong way to use it, and I think that the judgment that is involved in that kind of a delicate usage of stockpile release is so complicated it could often do more harm than more good.

The CHAIRMAN. Ms. La Drew?

Ms. LA DREW. I think our experience has shown as many times as the stockpile has been used to keep prices down, it has been used on the other extreme so that both the producers of materials have been hurt by disruptions in the market as well as the consumers and the users.

Our goal is to achieve a system where we don't experience those large disruptions in the market.

The CHAIRMAN. Assuming that there were speculators in zinc that saw the opportunity to drive up the price and thus reap a profit, I assume that the consumers of zinc had the same opportunity to look at those market forces and hedge against that. Is that correct?

Mr. SCHNEIER. No, sir. Generally speaking, we don't deal in futures at all.

The CHAIRMAN. You have the opportunity to do so.

Mr. SCHNEIER. But it is not done.

The CHAIRMAN. It is not done so then speculation is not perceived by you as being a major problem?

Mr. SCHNEIER. It is a problem from the standpoint that if the price is driven up high enough in certain areas of commodities, customers will then seek alternate materials and we will lose marketplaces for reasons beyond our control which we will never regain.

The CHAIRMAN. If you really believe that there is a serious problem, wouldn't you be investigating the use of futures or perhaps buying ahead yourself even if there were not a futures contract?

Mr. SCHNEIER. The marketplace is so subtle, it is a field of its own, and we don't feel we have the expertise to dabble in it. If we were that smart, we would not be in the die casting business.

The CHAIRMAN. There are those within the Government today who, looking at the strategic petroleum reserve, or other Federal emergency responses, who argue that the signal by Government of any kind of action in the event of a supply interruption or threatened supply interruption dampens private sector activity to anticipate precisely the same events, therefore increasing the volatility of the market, the impact upon the market and upon our security, and increasing the reliance, increasing the total reliance upon Federal Government responses rather than any private sector responses.

Is that a valid concern with respect to the metals market? If the Government is involved in the strategic stockpile, industries will not be involved in taking the steps that are necessary to anticipate cutoff? Mr. Harr?

Dr. **Harr**. Well, I don't agree with that, Senator. I think the factors that will dictate the degree to which the private industry prepares itself to meet cutoffs are short-term economic factors more than long-term security factors. They have to be to some degree because of the disciplines of private business.

To the degree to which—I am speculating now—a private producer saw the acquisition in our national defense stockpile of large quantities of a potentially critical material, he might depress his production, but I wouldn't think so, as long as it wasn't used capriciously. I think that is the keynote, that there are good reasons to release into the private sector the holdings of the inventories of the stockpile. There are good reasons in terms of rotating the inventories so that material is always up to standard and is not obsolete in the stockpile.

There are good reasons in terms of the needs of the commercial and civil economy as well as the defense economy from time to time, and it is a very careful art I think to make sure that you accommodate those needs without in effect having the Government be the manipulator of the marketplace, but again, let me point the finger right at the need for strong authority in whoever does this.

The **Chairman**. Ms. La Drew, you pointed to the shock of the cobalt shortage, both price and technological. You point to the fact that Pratt & Whitney, TRW, have done a great deal to substitute. You have devoted a lot of money to research on different kinds of alloys and different ways to use various metals in order to minimize the impact of such an occurrence in the future.

Am I correct in summarizing that portion of what you said?

Ms. **La Drew**. Yes.

The **Chairman**. Has your company done anything with respect to advanced purchases or stockpiling of materials to alleviate the shock of such changes?

Ms. **La Drew**. We looked at that as a strategy, and frankly, because of the large quantity of materials that we use—as my statement points out, 5,000 pounds of titanium for each engine—to try and stockpile that quantity of material—and that is just one of the materials used in the jet engine, for example—is prohibitive costwise.

Not only are we talking about the acquisition costs, but the storage, the insurance, the financing, the lost opportunity costs. They all add up to substantial sums.

We feel very strongly that there is a Federal role in stockpiling which must be made. There are some other materials, however, which we use in small quantities where the acquisition costs are not as great which do make suitable candidates for stockpiling, and we have done that in the past.

The same thing is true during the cobalt scare. Normally we do not involve ourselves in purchasing directly raw materials, but in the face of such an emergency situation, we did go out and as a company buy directly cobalt wherever we could buy it, so it depends on the circumstances. When our producers and our suppliers can't provide it to us, yes, we would intervene in what we thought an appropriate fashion to make sure that the production lines kept going.

The **CHAIRMAN**. Only in the event of an emergency and not in anticipation?

Ms. **LA DREW**. Not in a normal business activity.

The **CHAIRMAN**. Is it appropriate that that is a social cost rather than a production cost? In other words, you are expecting Government to do it, which simply externalizes the cost in our society from the production process of the taxpayer as a whole.

I judge that you have looked at the economics of doing it. What about the philosophy of doing it?

Dr. **HARR**. Well, unless you start, Mr. Chairman, with the proposition that these are essential to the national defense or other national well-being issues, then you can't make the argument, but it seems to me that is where we all start. That is a premise we have is that no, the Government shouldn't get into the materials procuring business for any reasons other than those of a critical, of a national security well-being.

It seems to me that should be the base upon which everything rides, and also the upper limit on how far they should get into the business, and it is a social cost if you want to put it that way.

The **CHAIRMAN**. In the 1970's we heard a great deal about substitution, recycling, and conservation as solutions to future minerals supply problems. The solutions were mostly offered by those who were opposed to domestic mineral development and were neither part of the producer industry nor the consumer industry.

Can we bank, in any large measurable degree, our future on these as solutions to the future national mineral supply needs? Ms. La Drew?

Ms. **LA DREW**. I think our experience shows that the future design of jet engines, for example, takes into account materials availability and the risk assessment that we have done internally to determine which materials might not be available for future production, so we are designing out in many cases those materials which we think are at risk.

We are also substituting. We are conserving. We are recycling. We think that those are all legitimate strategies that should be undertaken by private companies and I think that as we progress in the substitution effort, for example, we were able to make some easy substitutions during the late seventies. The engine performance characteristics where we made the substitutes were much less rigid than they are for the future advanced engines; for instance, the J-57 engine does not operate with a temperature requirement in it. The F-100 of today does, so those substitutions were easy.

What I am saying is that the substitution process, the gains that were made in the past will be very difficult to duplicate in the future. We have made revolutionary changes in our products up until today, but from here on it is going to be an evolutionary process as far as substitutes are concerned.

The CHAIRMAN. Mr. Schneier?

Mr. SCHNEIER. Back in the 1970's we had a twofold problem. Material was one, but energy was the other. In the case of aluminum it only takes approximately 5 percent of the energy to regenerate a pound of secondary aluminum versus producing a pound of primary aluminum. We, unfortunately, are one of the larger exporters of scrap for any industrial nation worldwide. We export something in the magnitude of 600 million tons a year of aluminum, current 1983 level. We also export stainless steel and other such critical materials because chromium and some of the strategic minerals that we have discussed today are going offshore as we sell that scrap.

The regeneration of scrap is a very vital issue, a very important one. We live on regenerated aluminum, and in the die casting industry almost all of it is done from secondary aluminum. Extrusions now are primarily made from regenerated aluminum—very clean aluminum, but yet it is still secondary.

The CHAIRMAN. The largest part of our preference for virgin materials was or has been imbedded in tax code, tax treatment, and transportation cost, has it not?

Mr. SCHNEIER. Partly; I am not sure I understand your question completely, Mr. Chairman.

The CHAIRMAN. The latter one about a tax code and tax treatment, transportation? I remember at one time the transportation differential upon virgin iron ore almost dictated its use rather than the recycled scrap which had very high transportation costs.

Mr. SCHNEIER. I understand what you are saying now. I think in the case of nonferrous material transportation costs aren't quite as predominant a factor as in ferrious. Primarily aluminum had certain uses such as in the canning industry—soft drinks, beer, what have you. They generate a voluminous amount of scrap and, of course, that scrap is utilized by many other industries, but I don't believe transportation as such is a predominant factor.

The CHAIRMAN. The substitution, recycling, conservation, particularly substitution, are those economic choices?

When you say you looked at the availability and the vulnerability, were you able to find substitutes that were just as economic, or did they cost more?

Ms. LA DREW. In that regard, we found, for example, that one of our candidates for cobalt substitution was another strategic material—columbium—and so it was a judgment on our part that cobalt was more sensitive than columbium and therefore we would switch to columbium.

In some cases we have realized some economic benefits. Obviously with the improved manufacturing technologies where we forged a closer near net shape, for example, we saved a tremendous amount of material, and it does have some side economic benefits, but primarily our impetus for instituting these programs was the availability question and not the affordability question.

The **Chairman**. Mr. Harr, any comments?

Dr. **Harr**. Well, Ms. La Drew touched on something I want to comment on—slightly tangential—but one of the buzz words in high technology industry, and I must say particularly with an industry which produces products for the Department of Defense, these days is to upgrade productivity of its whole process which includes substantial gains in manufacturing technology and also a major campaign to reduce waste and repair, get it right the first time because of the geometric or expedential increase in costs if you have to scrap anything at the end. In other words, design it in. Don't inspect it in is the name of the game.

That has significant payoffs in the conservation of critical materials as well which I think is Ms. La Drew's basic point, but we in the industry now have put almost nothing ahead of upgrading our productivity.

The **Chairman**. Thank you very much. I appreciate your testimony this morning, as I do all the witnesses. That concludes the hearing at this time. Thank you again for your testimony.

The hearing is adjourned

[Whereupon, at 12:52 p.m., the hearing was adjourned, subject to the call of the Chair.]

# GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS

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FRIDAY, JULY 22, 1983

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
*Washington, D.C.*

The committee met, pursuant to notice, at 2:07 p.m., in room SD-366, Dirksen Office Building, Hon. James A. McClure, chairman, presiding.

Present: Senators McClure and Hecht.

Also present: Robert Terrell, professional staff member; D. Michael Harvey, chief counsel for the minority; and Linda Mason, professional staff member for the minority.

## OPENING STATEMENT OF HON. JAMES A. McCLURE, A U.S. SENATOR FROM THE STATE OF IDAHO

The CHAIRMAN. The meeting will come to order.

Today marks the third day of hearings before this committee on the subject of geopolitics of strategic and critical materials. I welcome the distinguished witnesses appearing before us today.

Today's hearing will focus on international finance and assistance to foreign nations, many of whom supply this country with significant amounts of its strategic and critical material needs. There are also those nations who receive financial assistance that the United States views as potential sources for such materials in the future. Many of the mineral commodities developed through the use of financial assistance abroad are often the same mineral commodities developed in the United States and therefore compete for a share of the world market.

Recently, leaders in the domestic mining industry have lodged protests against the Government for being insensitive to the problems being caused in the international marketplace for minerals and metals due to international lending policies of the World Bank group, the International Monetary Fund, and other major intergovernmental financial institutions. If such lending policies are permitted to continue, the future ability of the domestic or private-sector mining and minerals industry to compete in a free market environment with mining and minerals industries abroad that are State owned, subsidized, or controlled will be diminished considerably.

As I stated before this committee at our hearing on June 20, the United States must be cognizant of the effects of our actions abroad where the term "free market" is absent from the vocabulary. The export of market efficiency must be a condition on the export of financial assistance.

While the adverse impacts of international lending during periods of high demand and strong prices are minimal, it is the period of depressed demand and weak prices that wreaks havoc on the private-sector mining industry. Because of the state owned or controlled nature of certain industries in lesser developed countries, development and production of mineral commodities in these countries is allowed to continue at capacity levels that are not reflective of world markets in spite of reduced demand and even when prices are at levels that are often below cost. This practice is rationalized on the basis of a need to generate foreign exchange and to maintain full employment levels.

Certainly the ability to generate foreign exchange and maintain full employment are meritorious goals. The persistence of this situation over the long haul, however, mitigates against U.S. self-sufficiency in strategic and critical minerals production, the domestic industry's ability to provide these minerals at reasonable prices, and ultimately the availability of these minerals. Thus, actions taken by international lending institutions in the future should be directed at projects in lesser developed countries that seek to achieve a strengthening of their respective economies, provide access to mineral commodities considered to be strategic and critical to U.S. needs, foster and promote free market practices and provide for a climate favorable to private investment.

Witnesses appearing before us today representing the Department of Treasury, the Agency for International Development, the International Trade Commission, and representatives from the domestic mining industry will shed light on this otherwise dark and depressing situation that has caused concern and consternation amongst Members of both Houses of Congress.

My colleague from the House of Representatives, Congressman Cooper Evans, will share with us his concerns and those of many of his colleagues in the House on this very important issue.

Again, I welcome each of you and look forward to hearing your testimony.

Before calling on the Congressman, I'd ask Senator Hecht if he has a statement he'd like to make at this time.

[The prepared statement of Senator McClure follows:]

STATEMENT OF
SENATOR JAMES A. McCLURE
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
JULY 22, 1983

HEARING: "GEOPOLITICS OF STRATEGIC AND CRITICAL MINERALS"

GOOD AFTERNOON. TODAY MARKS THE THIRD DAY OF HEARINGS BEFORE THIS COMMITTEE ON THE SUBJECT OF GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS. I WELCOME THE DISTINGUISHED WITNESSES APPEARING BEFORE US TODAY.

TODAY'S HEARING WILL FOCUS ON INTERNATIONAL FINANCE AND ASSISTANCE TO FOREIGN NATIONS,MANY OF WHOM SUPPLY THIS COUNTRY WITH SIGNIFICANT AMOUNTS OF ITS STRATEGIC AND CRITICAL MATERIAL NEEDS. THERE ARE ALSO THOSE NATIONS WHO RECEIVE FINANCIAL ASSISTANCE THAT THE UNITED STATES VIEWS AS POTENTIAL SOURCES FOR SUCH MATERIALS IN THE FUTURE. MANY OF THE MINERAL COMMODITIES DEVELOPED THROUGH THE USE OF FINANCIAL ASSISTANCE ABROAD ARE OFTEN THE SAME MINERAL COMMODITIES DEVELOPED IN THE UNITED STATES AND THEREFORE COMPETE FOR A SHARE OF THE WORLD MARKET.

RECENTLY, LEADERS IN THE DOMESTIC MINING INDUSTRY HAVE LODGED PROTESTS AGAINST THE GOVERNMENT FOR BEING INSENSITIVE TO THE PROBLEMS BEING CAUSED IN THE INTERNATIONAL MARKETPLACE FOR MINERALS AND METALS DUE TO INTERNATIONAL LENDING POLICIES OF THE WORLD BANK GROUP, THE INTERNATIONAL MONETARY FUND AND OTHER MAJOR INTERGOVERNMENTAL FINANCIAL INSTITUTIONS. IF SUCH LENDING POLICIES ARE PERMITTED TO CONTINUE, THE FUTURE ABILITY OF THE DOMESTIC OR PRIVATE-SECTOR MINING AND MINERALS INDUSTRY TO COMPETE IN A FREE MARKET ENVIRONMENT WITH MINING AND MINERALS INDUSTRIES ABROAD THAT ARE STATE-OWNED, SUBSIDIZED, OR CONTROLLED WILL BE DIMINISHED CONSIDERABLY.

AS I STATED BEFORE THIS COMMITTEE AT OUR HEARING ON JUNE 20, THE UNITED STATES MUST BE COGNIZANT OF THE EFFECTS OF OUR ACTIONS ABROAD WHERE THE TERM "FREE MARKET" IS ABSENT FROM THE VOCABULARY. THE EXPORT OF MARKET EFFICIENCY MUST BE A CONDITION ON THE EXPORT OF FINANCIAL ASSISTANCE.

WHILE THE ADVERSE IMPACTS OF INTERNATIONAL LENDING DURING PERIODS OF HIGH DEMAND AND STRONG PRICES ARE MINIMAL, IT IS THE PERIOD OF DEPRESSED DEMAND AND WEAK PRICES THAT WREAKS HAVOC ON THE

PRIVATE-SECTOR MINING INDUSTRY. BECAUSE OF THE STATE-OWNED OR - CONTROLLED NATURE OF CERTAIN INDUSTRIES IN LESSER DEVELOPED COUNTRIES, DEVELOPMENT AND PRODUCTION OF MINERAL COMMODITIES IN THESE COUNTRIES IS ALLOWED TO CONTINUE AT CAPACITY LEVELS THAT ARE NOT REFLECTIVE OF WORLD MARKETS IN SPITE OF REDUCED DEMAND AND EVEN WHEN PRICES ARE AT LEVELS THAT ARE OFTEN BELOW COST. THIS PRACTICE IS RATIONALIZED ON THE BASIS OF A NEED TO GENERATE FOREIGN EXCHANGE AND TO MAINTAIN FULL EMPLOYMENT LEVELS.

CERTAINLY THE ABILITY TO GENERATE FOREIGN EXCHANGE AND MAINTAIN FULL EMPLOYMENT ARE MERITORIUS GOALS. THE PERSISTANCE OF THIS SITUATION OVER THE LONG HAUL, HOWEVER, MITIGATES AGAINST U.S. SELF-SUFFICIENCY IN STRATEGIC AND CRITICAL MINERALS PRODUCTION, THE DOMESTIC INDUSTRY'S ABILITY TO PROVIDE THESE MINERALS AT REASONABLE PRICES, AND ULTIMATELY THE AVAILABILITY OF THESE MINERALS. THUS, ACTIONS TAKEN BY INTERNATIONAL LENDING INSTITUTIONS IN THE FUTURE SHOULD BE DIRECTED AT PROJECTS IN LESSER DEVELOPED COUNTRIES THAT SEEK TO ACHIEVE A STRENGTHENING OF THEIR RESPECTIVE ECONOMIES, PROVIDE ACCESS TO MINERAL COMMODITIES CONSIDERED TO BE STRATEGIC AND CRITICAL TO U.S. NEEDS, FOSTER AND PROMOTE FREE MARKET PRACTICES AND PROVIDE FOR A CLIMATE FAVORABLE TO PRIVATE INVESTMENT.

WITNESSES APPEARING BEFORE US TODAY REPRESENTING THE DEPARTMENT OF TREASURY, THE AGENCY FOR INTERNATIONAL DEVELOPMENT, THE INTERNATIONAL TRADE COMMISSION AND REPRESENTATIVES FROM THE DOMESTIC MINING INDUSTRY WILL SHED LIGHT ON THIS OTHERWISE DARK AND DEPRESSING SITUATION THAT HAS CAUSED CONCERN AND CONSTERNATION AMONGST MEMBERS OF BOTH HOUSES OF CONGRESS. MY COLLEAGUE FROM THE HOUSE OF REPRESENTATIVES, CONGRESSMAN COOPER EVANS, WILL SHARE WITH US HIS CONCERNS AND THOSE OF MANY OF HIS COLLEAGUES IN THE HOUSE ON THIS VERY IMPORTANT ISSUE.

AGAIN, I WELCOME EACH OF YOU AND I LOOK FORWARD TO HEARING YOUR TESTIMONY.

## STATEMENT OF HON. CHIC HECHT, A U.S. SENATOR FROM THE STATE OF NEVADA

Senator HECHT. Thank you, Mr. Chairman. I have no prepared statement except to say I'm from Nevada and this is one of our critical problems in Nevada: How can we rationalize helping foreign countries subsidize their mining when our own people are unemployed?

So if the different members of the panel can help us address this issue, I'd be very appreciative. Thank you very much.

The CHAIRMAN. Call first on Congressman Evans please.

Congressman, you are very welcome before this committee today.

## STATEMENT OF HON. COOPER EVANS, A U.S. REPRESENTATIVE FROM THE STATE OF IOWA

Mr. EVANS. Well, thank you, Mr. Chairman. I certainly want to commend the committee on examining this most important area and to thank you for giving me the opportunity to appear. I do have written testimony to submit for the record. If it's acceptable to the chairman, I would prefer to proceed somewhat less formally as far as my remarks are concerned.

The CHAIRMAN. Your entire prepared statement will appear in the record, and you may proceed as you desire.

Mr. EVANS. I think I should warn the chairman of the committee that I approach the subject from a somewhat different point of view, I think, than you do in that you are directly approaching the problem of minerals and critical and strategic materials in this country, and I'm approaching it from the standpoint of a Member of the House of Representatives who is a member of the Agriculture Committee who is very much concerned in the general subject of promoting our agricultural exports. And there is a connection I think.

It's a very frustrating job these days promoting the export of agricultural commodities from this country. There are many aspects to that problem, but the part that I would like to focus on are those many customers around the world in the less developed countries who would truly like to buy from us in the agricultural markets and who are unable to do so because of monetary problems throughout the world.

It is easy these days to go to many parts of the world and get an order to buy U.S. agricultural commodities and you get a very respectable letter of credit from that potential buyer. When you come back to the United States with that order and that letter of credit, however, one finds it impossible in the commercial banking system to get a confirmation of that letter of credit. The problem is not the ability of the potential buyer to pay, the problem is the inability of that country to clear its accounts and to make payment in the United States.

We might say that many of these countries that are potentially and now good customers of ours have gone through all the unsecured credit that they can get for this purpose for a while and it imposes severe restraints on our agricultural exports. In 1981 we exported some 44 billion dollars' worth of agricultural commodities.

I think this year we will probably be down to $34 billion. It is a most serious degradation of our export capability.

Now, I would submit that this problem is not likely to get better in the immediate future and could conceivably get worse. And it is one that those of us who are primarily concerned with agriculture are very much interested in solving. And there is, I think, an interesting point here that relates to the concerns of this committee that ties the two problems together somewhat in that many of those countries that want to buy from us have natural resources in abundance that we badly need in this country. The problem is how to make the exchange.

What I would like to do for several minutes here is to talk about some examples that have occurred that get at solving this problem and some proposals that have been made that I think have some interesting possibilities and ought to be considered by this committee. And of course, the obvious thing and the most straightforward approach to mutual solution of these problems is what we call barter. And our country has engaged in this to a limited extent in past decades and more recently. The rescue operation of Mexico a year or so ago bears some resemblance to this in which we agreed to buy a billion dollars worth of their oil and they agreed over a period of time to take a billion dollars worth of our feed grains.

Now more recently there has been a barter arrangement concluded between our Government and Jamaica for bauxite and surplus dairy products. Within the last year or two there have been numerous approaches to our Government by the Soviet Union to exchange nickel, in one instance, for surplus dairy products, both at essentially the world prices for those commodities.

More recently, there has been a similar approach using flourspar as the medium on their side.

This, of course, is an area that I think will generate continued interest. I expressed myself, or would say that I am considerably disappointed that the administration has not accepted some of the Russian offers in this regard. And I think they should be seriously considered in the months ahead.

To move on to some of the areas that I think are more promising and of more general interest and offer considerably more flexibility in the area one can speak of a variety of offsetting transactions rather than pure barter that are possible. And I give you an example of one that has been negotiated seriously the last 6 weeks or so in London and Geneva between interests of Nigeria and private trading interests of this country where the proposal was for our interests to agree to take 2.5 million barrels of their oil for industrial and commercial purposes and for us to sell them a corresponding amount of grains in two separate parallel transactions with the Central Bank of Nigeria being assured that thereby it would have the funds to clear the account.

But I think the most interesting possibility of all relates to something that I would refer to as a strategic and critical materials bank as opposed to a strategic and critical materials reserve. And if I may illustrate the point with the means, the circumstances under which this came to my attention. One of the very large traders on the worldwide basis in a variety of commodities came to me and said, I cannot get any letters of credit confirmed in this country.

How would it be if my potential customer put in this country, physically placed in this country an amount of a very desirable material, a wide range of which are possible, but he did not sell it here, that he kept title to it, that he put it in a warehouse, that he got a negotiable warehouse receipt and then he went and borrowed on that warehouse receipt to finance this transaction and that material became collateral for the eventual and timely payment of that account?

Well, if one carries this through, one rapidly comes around to considering the feasibility and desirability of using our strategic and critical materials reserve to serve this banking function. And it has some very interesting possibilities in reducing the costs of filling that reserve.

At the present time I'm under the impression that we're some $10 billion short of meeting the goals of that stockpile. The funding rate is perhaps $120 million a year. At that rate it takes something like 100 years to meet the goals of that reserve.

I think there are some interesting possibilities in saying to some of these countries, if you can't get unsecured credit, we offer you a chance to get secured credit by putting some of these materials that we need very badly in this country in storage in a facility in connection with our stockpile. We will from that give you a warehouse receipt which is negotiable which you can go and borrow, use as collateral for borrowing and thereby finance the transaction.

The thought would be, of course, that they do not forfeit the collateral, that it stays there and remains as collateral for subsequent transactions. Any such arrangement would, of course, have to include provisions for the United States to obtain clear title in case of national emergency. It would have to include provisions that in case the material was going to be removed from the bank, if you will, or sold, that the United States had the first right of refusal to purchase at that time.

It is an interesting concept, Mr. Chairman, in my judgment and one that would bear some consideration by a variety of interests on both sides of the Capitol.

Thank you very much for having me here today to visit with you.

[The prepared statement of Mr. Evans follows:]

### Statement of Honorable Cooper Evans

### of Iowa before the

### Senate Committee on Energy and Natural Resources

### July 22, 1983

Mr. Chairman and Members of the Committee, I am pleased and honored to have the opportunity to appear before you. I would like to commend the Committee for initiating these hearings which are aimed at assessing our vulnerability to a shut-off from foreign sources of strategic and critical materials. I share the Chairman's concern in these matters.

I understand that you have had witnesses focusing on the importance of continued commercial availability of strategic and critical materials. However, I have come to talk to you about these materials from the following slightly different perspective: our government's holdings of strategic and critical materials and what can be done to improve those holdings.

Permit me to point out some basic facts about the National Defense Stockpile. Stockpile goals are set for a total of 61 family groups and individual materials at levels that will sustain the United States for three years in the event of a national emergency. The type of materials involved include bauxite, nickel, flourspar, cobalt, quinidine, columbium and many others. Due to lack of funding the stockpile is estimated to be $10.3 billion short of materials many of which are only available from foreign sources. For example, during 1978-1982 our import dependency averaged 94 percent for bauxite; 73 percent for nickel; 85 percent for flourspar; and 100 percent for columbium, quinidine and rubber (these dependency figures are based on commercial as well as stockpile acquisitions). With annual appropriations of around $120 million-- the total for the current fiscal year-- it will take close to a century to meet those goals.

In these times of tight budgets, simply trying to increase appropriations for the stockpile is not a viable option. However, while the government has this critical shortage in one area, there is a sizable surplus in another--namely, agricultural products, especially dairy products. Currently, the dairy stocks owned by the Commodity Credit Corporation (CCC) are valued at over $3.25 billion. These stocks include over 476 million pounds of butter, 891 million pounds of cheese and 1.33 billion pounds of nonfat dry milk. Even with the movement of some of this dairy surplus through domestic and international donation programs, procurement and storage costs for the uncommitted dairy stocks continue to mount. Over the past year (July 16, 1982 - July 15, 1983) the butter stocks increased by 33 million pounds or 7.4 percent, the cheese stocks increased 107 million pounds or 13.6 percent, and the nonfat dry milk stocks increased 202 million pounds or 17.9 percent.

It seems to me and some of my Congressional Colleagues that swapping some of our surplus dairy products for the strategic and critical materials that our country needs makes good sense. We have been encouraging the Administration to use the barter authority that exists and have introduced some measures that would strengthen or open up new methods of reaching a better balance in these two areas.

According to the U.S. Department of Agriculture (USDA), the barter authority included in the CCC Charter Act facilitated the barter of some 60 materials from 50 countries over the period of July 1, 1949 and June 30, 1973. In 1973 the program was suspended for a number of reasons including changes in the strategic stockpile goals and an inability to match suppliers of strategic materials with those which needed grains. Generally, it was felt That barter was not a cost-effective way to expand U.S. agricultural exports. I would like to remind you that during the 1970's our agricultural exports expanded at an unprecedented rate--total sales in fiscal year 1972 were $8.2 billion and by fiscal year 1981 the figure was $43.8 billion. that is a five-fold increase. However, the world economic situation has taken its toll on our exports. This year USDA is projecting a second consecutive year of decline in total exports to perhaps $34.5 billion. Prior to 1982 our agricultural exports had increased every year since 1969.

Many of our current and potential customers for agricultural commodities, especially in developing countries, are facing serious debt problems. This has resulted in the inability of these nations to obtain the credit necessary to finance purchases from the United States. Consequently, these nations are either tightening already snug belts or they are benefitting from some enticing credit available from competing agricultural exporting nations. Many of the countries that would like to buy farm products from us do have natural resources which are on our stockpile list. Clearly, there appear to be the proper international market conditions for a return to barter transactions.

Under the current Administration two separate barter arrangements have been worked out-- both have been with Jamaica and both involve the exchange of Jamaican bauxite for U.S. dairy products. The first agreement, signed in February 1982, encompasses 400,000 tons of bauxite for 9,115 metric tons of nonfat dry milk and butteroil. The General Services Administration will reimburse the CCC for the bauxite by the end of fiscal year 1984. At this date the second agreement is being negotiated and the details have not been finalized by the two governments.

I would like to turn now to the initiatives being considered in the House of Representatives during this session. In addition to the introduction of a resolution expressing the sense of Congress that the Secretary of Agriculture should use existing authority to exchange or barter to the maximum extent practicable, several specific measures are in various stages of consideration in the House. In April, I introduced a bill which will allow United States exporters of agricultural commodities to obtain a letter of commitment from the Commodity Credit Corporation to accept needed materials for the National Defense Stockpile or the Strategic Petroleum Reserve. The agreement would also specify the quantity and quality to be delivered and the price the exporter would receive for the materials. This firm commitment by CCC would give exporters flexibility to search out markets which otherwise might not be served. The CCC upon receipt of the foreign materials is then authorized to sell the acquired materials to our national stockpiles. This legislation goes beyond the current authority in that petroleum is also included as a possible strategic and critical material for these types of transactions and, of great importance, it gets the government out of the negotiations and puts it into the hands of private enterprise which is more adept at the intricacies of trade. An amendment which would create this type of innovative method to exchange needed materials has also been attached to the Export Administration Act reauthorization legislation which is expected to come to the floor of the House before the August recess.

Another of my initiatives which my colleague from Iowa, Senator Jepsen, plans to introduce in the Senate, is specifically aimed at exporting dairy products in exchange for strategic and critical materials over the next two years. Again, this bill does not place the burden of transactions on the Government but rather provides a workable pricing structure so that private traders can carry out the transactions. The pricing structure provides that the value assigned to the surplus dairy stocks in the exchange shall not be less than the current world price on a delivered basis and the value assigned to the strategic and critical materials in the exchange shall not be more than the current world price on a delivered basis. We are specifying that if the CCC receives appropriate bids, up to 15 percent of the uncommitted dairy stocks will be shipped under this program each year for two years.

Another idea is focused specifically at those foreign countries which have needed strategic and critical materials and a desire to import U.S. farm products but which face foreign exchange shortages. The debt problems and foreign exchange shortages inhibit imports. However, this bill would allow the country to ship the strategic materials to the U.S. to be stored in this country and used as collateral for loans to buy the much needed agricultural commodities. To qualify as collateral, the U.S. government, through the stockpile or petroleum reserve, would issue a warehouse receipt. The terms of this warehouse receipt would allow the U.S. government to purchase the materials in the event of a national emergency and assure the government the right of first refusal if the material is to be sold or transferred.

All of these initiatives are based on the idea that exporting our surplus agricultural products during a period of world economic trouble is difficult, but barter or countertrade or variations thereof offer some interesting possibilities that should be thoroughly explored, not only to promote our agricultural exports, but to gain for us strategic and critical materials currently in very short supply.

Mr. Chairman, I would again like to thank you for this opportunity to appear before your Committee to discuss these issues. At this time, I would welcome any comments, questions, or suggestions you may have.

The CHAIRMAN. Thank you very much, Congressman. I appreciate your interest on both ends of this question. And certainly those of us from Idaho are no less interested. Whether it be by direct sale, it depends upon the economic capacity of a country to purchase, or by barter or exchange or by whatever means we balance those trade figures, it becomes a matter of great importance to us in any of the agricultural areas of this country. And I hope all the taxpayers in this country will recognize the tremendous value there is in exporting our agricultural surpluses and the value that that has in our balance of payments.

Mr. EVANS. If it doesn't rain in the Midwest, there won't be any surpluses pretty soon, Mr. Chairman.

The CHAIRMAN. Well, I don't wish the Midwest any bad luck, but I would like to see a little better price for wheat.

Mr. EVANS. Thank you very much.

The CHAIRMAN. Congressman, back in 1954, at least under the Agricultural Trade and Development Act of 1954, there were two objectives that were accomplished by that act: First, it facilitated the urgent political necessity of disposing of farm surpluses in foreign markets, and that reinforced the then price-support program; and second, it provided for trading these farm surpluses for foreign mineral surpluses and did create a supplemental stockpile of strategic and critical materials.

As a matter of fact, I am informed that the total value of materials acquired for the supplemental stockpile was $1,103,506,000 of which 961,920,000 dollars' worth had been acquired through bartering, and the remainder through purchases using foreign currencies acquired in sales of farm surpluses.

Now you've undertaken a similar objective in the legislation you have introduced in the House of Representatives. Is that correct?

Mr. EVANS. Yes, that's correct. I think that the law that was written then made a great deal of sense then. I think it has some shortcomings now. I think it is readily, it can readily be adapted to the present situation. But the fact is that today, with the exception of dairy products, we do not have great supplies of grain to which the Government has clear title and can be used in those programs. The only material that we really have in any abundance that we can use is the—are the dairy products.

One can come up with a variety of approaches, one of which I have outlined today, that move the barter from government to government—since in this case our Government has very little to barter at the present time except dairy products—to one in which the government benefits from that barter but it is for the most part carried on in private channels, at least on our side. And I think that would be a very constructive development to pursue.

The CHAIRMAN. Thank you very much, Congressman.

Senator Hecht, do you have any questions?

Senator HECHT. Congressman, maybe you are involved in this in the House, but a bill has been recently proposed by Senator Tower and others in the Senate to facilitate the barter of agricultural commodities by the Commodity Credit Corporation in exchange for strategic materials for the stockpile. Do you and your constituents in the agricultural community support this concept?

Mr. EVANS. In general we do. I have to confess that I am not familiar with the details of Senator Tower's proposition. But I think that one should at this point become a bit more sophisticated on one's approach than to call it barter and to use what we have termed as barter in the past.

I think that is—If you visit with anyone who has attempted to barter, in or out of Government, it is an extremely difficult thing to do. And to the extent that you can use these commodities for security and use dollars or other currencies for the transaction, I think there are great advantages to being a bit more sophisticated about the approach, and would be glad to visit with anyone who wants to go into that in more detail.

Senator HECHT. Thank you.

The CHAIRMAN. Thank you very much. Your activities as well as your testimony are very constructive. Thank you.

Our next witness will be Mr. Robert A. Cornell, Deputy Assistant Secretary for Trade and Investment, U.S. Department of the Treasury.

Mr. Secretary, we have your written statement. It will be made a part of the record. You could summarize or deliver that statement as you desire.

## STATEMENT OF HON. ROBERT A. CORNELL, DEPUTY ASSISTANT SECRETARY FOR TRADE AND INVESTMENT POLICY, DEPARTMENT OF THE TREASURY

Mr. CORNELL. Thank you, Mr. Chairman. I will, with your permission, do as much summarizing as I can.

The CHAIRMAN. Certainly.

Mr. CORNELL. I very much appreciate the opportunity to testify before you today. As you know, the Treasury Department is responsible for representing the U.S. Government in both the World Bank Group and the IMF, and it has a primary role in developing and implementing the relevant U.S. policy on behalf of both Congress and the executive branch.

I would like first to describe the activities of the World Bank Group in recent years regarding mineral industries. Next I will explain the indirect influence of the IMF on foreign mineral development. And finally, I will describe U.S. policy toward the international financial institutions and the policy coordination mechanism within the executive branch.

The Bank Group through the IBRD, the World Bank itself, the IDA, International Development Association, and the IFC, the International Finance Corporation, has been the source of only moderate investment in minerals industries in developing countries.

Since 1958 when the Bank made its first loan to the nonfuel minerals area through 1976, a total of 17 nonfuel-mineral loans aggregating slightly over $600 million were made.

In 1977, the Bank set a goal of doubling the annual number of nonfuel mineral projects. This goal was not met and minerals financing has remained well below 2 percent of cumulative Bank commitments.

The IFC embarked on an expanded mineral program in 1977. As a result the share of mineral projects in IFC's portfolio increased from about 8 percent to 13 percent over this period. Very few of the Bank's and IFC's mineral loans involved every large mining projects. They focussed instead on small projects.

Moreover, a significant portion of the World Bank Group's activity was devoted to increased technical assistance rather than direct capital spending, corresponding to the Bank Group's policy encouraging private investors to undertake worthwhile projects which might otherwise go unfunded. Also the mineral project loans were widely dispersed geographically.

Three factors have been responsible for the relatively slow increase in mineral loans despite the Bank Group's interest in doing so:

First, mineral markets have been relatively weak during the last 4 years, reflecting substantial excess capacity around the world;

Second, a number of developing countries have pursued private sector development of their mineral resources;

Third, several countries have given a higher priority to the development of nonmineral sectors.

The relative unattractiveness of mining investments around the world has been well documented. For example, preliminary estimates indicate that production capacity for copper increased only 2 or 3 percent per year from 1977 through 1982, compared to an increase of over 4 percent a year during the previous 8 years. Sharply rising costs in the face or stagnant or declining prices reduced companies' income and their ability to invest in new projects.

Although we expect the economic recovery to strengthen demand for minerals, especially given the strength of the recovery which is taking place, prices of these commodities are expected to rise only gradually and probably will not reach levels sufficient encourage substantial new investment until late in the recovery phase.

The Bank's Executive Directors also approved in 1977 an expansion of the Bank's lending for fuel minerals and in 1979, for oil and gas exploration. The Bank was authorized for the first time to finance oil and gas development in the hope that relatively modest Bank financing would attract a much larger flow of investments from private sources.

In 1981, Bank management proposed a further expansion of its energy lending, whereby this lending in the fiscal years 1982 through 1986 would be increased from $14 billion to $30 billion, of which one-third was to be for oil and gas. In addition, a new energy affiliate was proposed to generate the required resources.

After careful review the United States decided to oppose the proposed energy affiliate and reserve judgment on the proposed expansion of energy lending itself. Rather we urge the Bank to facilitate and act as a catalyst for private investment by providing technical assistance. Only in rare cases should it act as a lender of last resort so as not to displace funds which would otherwise have been available from the private sector.

Now for a few words on the IMF. As you know, the International Monetary Fund is the world's central official monetary institution. It's functions include providing temporary balance-of-payments financing in support of economic adjustment efforts, monitoring and judging the appropriateness of its members' foreign exchange arrangements and policies, examining their economic policies, reviewing the adequacy of international liquidity, and providing mechanisms through which its member governments cooperate to improve the functioning of the international monetary system.

IMF financing is not project specific, but is provided to members' monetary authorities to meet general balance of payments financing requirements. The economic policy conditions associated with phased use of IMF resources are designed to insure that the adjustment measures are both effective in strengthening borrowers' external positions and internationally responsible in terms of trade policy and other generally accepted international principles.

The IMF has facilities to meet special balance-of-payments financing needs of some members, especially commodity exporters. An IMF member in balance-of-payments need experiencing export earnings shortfalls largely beyond its control can obtain temporary financing by applying to the IMF's compensatory financing facility.

Another Fund facility for commodity producers is the buffer stock financing facility, the BSFF. The BSFF provides short-term financing to IMF members with balance-of-payments problems, if, first, those countries are members of international buffer stock commodity agreements representing the interests of both producers and consumers, and second, they require assistance to meet their financial commitments to such agreements.

As regards mineral supplies, the influence of the World Bank and the IMF is both direct and indirect. In general, it is our view that their influence is healthy and contributes to the overall economic growth and development of the borrowing nations.

The Bank Group's loans to minerals projects generally expand overall output or improve the efficiency of borrowers' mining operations. Also, they contribute to improving technology and management expertise in the host country's mining industry through a variety of technical assistance covenants attached to the projects or as part of pre-feasibility and feasibility studies.

Indirectly, in addition, the Bank Group contributes to the growth and development of a host country's mining sector through the many basic needs and infrastructure projects which constitute the large majority of its loan portfolio and new commitments. Thus, the Bank Group, through its general economic development lending contributes to healthy and balanced development of mining sectors.

The impact of IMF's lending activities on mineral supplies is both limited and extremely indirect. Its financing is not in any way earmarked for, or conditioned upon, policies directly affecting commodities production or export. Through the use of IMF resources, a borrowing country receives financing which enables it to maintain higher levels of growth and imports while it is putting adjustment measures in place.

On balance, we see the World Bank Group and the IMF programs as contributing positively to a borrower's ability to adjust to international economic developments, to develop a competitive minerals industry, and augment security of supply for minerals important to the world economy.

I'd like to close with a few remarks about U.S. policy toward the international financial institutions and how policy decisions regarding them are coordinated within the executive branch.

The United States has pursued three broad policy objectives through its participation in the development institutions that I have described. The first of these, which might be characterized as political and strategic, is based on the U.S. foreign policy role as leader of the non-Communist world. Fulfillment of this role has several specific dimensions as it relates to our participation in the MDB's—the multilateral development banks.

The long-term dimension calls for the development of a more secure and stable world through the promotion of steady economic growth. The medium-term dimension calls for effective development assistance programs in those countries which we consider to be of political and strategic importance. The short-term dimension is the current debt problem. This problem, which has been much in the news lately, calls for rapid economic support for key countries which are in need of immediate assistance.

The second, and closely related, broad policy objective has to do with the preservation and growth of a free, open, and stable economic and financial system through the promotion of economic and social development. The MDB's do this by acting as catalysts for private investment and other private capital flows, as well as trade and technology flows. And as you know, this fostering of market oriented development is one of the key priorities of this administration.

The third broad policy objective has to do with our humanitarian concern with alleviating poverty and improving the material wellbeing of the poor in developing countries. The MDB's do this through their general development lending.

United States policy toward the multilateral financial institutions is basically the responsibility of the Treasury Department in consultation with other concerned agencies. Major economic policy issues are deliberated by the Cabinet Council on Economic Affairs, the CCEA, which is chaired by Treasury. An interagency staff level working group on multilateral aid, abbreviated WGMA, also chaired by Treasury, evaluates all loan requests made to the MDB's. This group now includes the Department of Interior's Bureau of Mines to assist in the evaluation of minerals projects.

United States policy is to oppose loan proposals which would generate excess supplies in world markets, which would displace private investment initiatives, or which would foster undesirable departures from a market-oriented economy.

Finally, the National Advisory Council, or NAC, chaired by the Treasury Department, is responsible for coordinating the financial aspects of U.S. participation in the international financial institutions. U.S. representatives to the institutions are instructed through the NAC and the NAC provides advice to the Secretary of the Treasury, as U.S. Governor of the international financial institutions. The NAC also reviews the policies and practices of all agencies of the U.S. Government which participate in making or guaranteeing foreign loans.

This concludes my formal statement. I'd be pleased to respond to any questions which the committee has.

[The prepared statement of Mr. Cornell follows:]

Testimony of R. A. Cornell
Deputy Assistant Secretary for
Trade and Investment Policy
Department of the Treasury
Before the
Senate Committee on Energy and
Natural Resources
Washington, D.C.

July 22, 1983

## Roles of the World Bank and International Monetary Fund in Assisting Foreign Mineral Development

I appreciate the opportunity to testify before the Energy and Natural Resources Committee today to explain the roles played by the World Bank Group and the International Monetary Fund (IMF) in assisting foreign mineral development. As you know the Treasury Department is responsible for representing the U.S. Government in both of these institutions. There it has a primary role in developing and implementing relevant U.S. policy on behalf of both Congress and the Executive Branch.

In my remarks today I would first like to describe the activities of the World Bank Group in recent years regarding minerals industries. Next I will explain the purposes and functions of the IMF and its indirect influence on foreign mineral development. Also I will discuss the roles these two financial institutions play in contributing to long-run, stable minerals supplies. Finally, I will articulate U.S. policy towards the international financial institutions and how policy decisions regarding these are coordinated within the Executive Branch.

### World Bank Group Performance

The Bank Group through the IBRD, IDA, and IFC has been the source of moderate investment in minerals industries in developing countries. Since 1958 when the Bank made its first loan to the non-fuel minerals area and through 1976, a total of 17 non-fuel mineral loans aggregating slightly over $600 million were made. These have been located in a broad range of countries and have been linked with substantial private sector and host country financing. Thus the Bank's efforts have contributed to geographic diversification of world mineral supplies.

In 1977 the Bank decided to double the annual number of non-fuel minerals projects. This goal was not met and minerals financing has remained well below 2% of cumulative Bank commitments.

In the case of the International Finance Corporation (IFC) arm of the World Bank Group, it too embarked on an expanded minerals program in 1977. While the IFC came close to its goal, the share of minerals projects in its portfolio increased from about 8% to 13% over this period. Very few of the Bank's and IFC's minerals loans involved large mining projects, focussing instead on small mining projects. Moreover, a significant level of this activity was devoted to increased technical assistance -- corresponding to the Bank Group's view of playing a catalyst role which encourages private investors to undertake projects which might otherwise go unfunded, and involved wide geographic dispersion.

Three factors have been cited as responsible for the relatively slow movement after the decision to expand the role of the Bank Group:

-- Mineral markets have been relatively weak during the last 4 years reflecting substantial excess capacity around the world;

-- a number of developing countries have pursued private sector development of their mineral resources;

-- several countries have preferred to give a higher priority to development of non-mineral sectors.

The relative unattractiveness of mining investments around the world has been well documented by a number of studies. For example, preliminary estimates indicate capacity for copper increased only about 2-3 percent per year during 1977-82 compared to over 4 percent a year during 1970-77. The sharply rising costs in the face of stagnant or declining prices with the inevitable effect on the companies' income statements and balance sheets make many current project proposals uneconomic. Although we expect the economic recovery to strengthen demand for minerals, prices of these commodities are expected to rise only gradually and probably will not get to levels that will encourage substantial new investment until much later in the recovery phase.

The Bank's Executive Directors also approved an expansion of the Bank's lending for fuel minerals in 1977 and in 1979 for oil and gas exploration. The Bank was authorized for the first time to finance oil and gas development in the hope that relatively modest Bank financing would attract a much larger flow of investments from private sources.

In 1981 Bank management proposed a further expansion of its energy lending whereby its FY82-86 energy lending program would be increased from $14 billion to $30 billion, of which one-third was to be for oil and gas. In addition, an Energy Affiliate was proposed to generate the required resources.

However, after careful review, the U.S. decided to oppose the proposed Energy Affiliate and reserve judgment on the proposed expansion of energy lending. Rather we urged the Bank to facilitate and act as a catalyst for private investment by providing technical assistance. Only when necessary should it act as a lender of last resort so as not to displace funds which would otherwise be available.

## International Monetary Fund Performance

The International Monetary Fund (IMF) is the world's central official monetary institution. It was established in the early postwar years to help assure development of an open and cooperative international trade and payments system; and to prevent a recurrence of the widespread recourse to damaging domestic policies, restrictive trade and payments measures and predatory exchange rate practices that had contributed to the conditions leading to the outbreak of World War II. Its functions include providing temporary balance of payments financing in support of economic adjustment efforts, monitoring and appropriateness of its members' foreign exchange arrangements and policies, examining their economic policies, reviewing the adequacy of international liquidity, and providing mechanisms through which its member governments cooperate to improve the functioning of the international monetary system.

The resources of the IMF, provided by all its member countries and available to all on the basis of uniform conditions and criteria, are available to provide temporary balance of payments financing in support of members' efforts to implement sound economic adjustment programs. IMF financing is not project specific, but is provided to member's monetary authorities to meet general balance of payments financing requirements. The economic policy conditions associated with phased use of IMF resources are designed to ensure that the adjustment measures are both effective in strengthening borrowers' external positions and internationally responsible.

The IMF has special facilities which provide limited resources to meet special balance of payments financing needs of members, especially commodity exporters. An IMF member in balance of payments need experiencing export earnings shortfalls largely beyond its control can obtain temporary financing by applying to the IMF's compensatory finance facility (CFF). Another Fund facility of relevance to commodity producers is the buffer stock financing facility (BSFF). The BSFF provides short-term financing to IMF members in balance of payments need which are members of international buffer stock commodity agreements representing the interests of both producers and consumers and which require assistance to meet their financial commitments to such agreements.

## Influence on Minerals Supplies

The World Bank has both direct and indirect effects on mineral industries in member countries. In general, it is our view that such impacts are healthy and contribute to the overall economic growth and development of the borrowing nations.

The Bank Group's loans to minerals projects generally expand overall output or improve the efficiency of borrowers' mining operations. Also, they contribute to improving technology and management expertise in the host country's mining industry through a variety of technical assistance covenants attached to the projects or as part of pre-feasibility and feasibility studies.

Indirectly, the Bank Group contributes to the growth and development of a host country mining sector through the many basic human needs and infrastructure loans which constitute the large majority of its loan portfolio and new loan commitments. These loans aim to improve the overall economic structure of the country which naturally provides a firm foundation to the mining sector and to every sector in the host country. Participation of the Bank Group, including the IFC, in mining projects encourages the international and domestic private mining and financial communities to participate in these ventures. These co-financing features allow the Bank Group to leverage its resources and act as a catalyst in promoting sound economic development. Finally, the geographic diversification of the Bank Group's mining and other loans contributes to the total growth of minerals supplies and more efficient minerals operations in an ever widening geographic group of supplying countries.

The impact of IMF's lending activities on mineral supplies is limited. Its financing is not in any way earmarked for, or conditioned upon policies directly affecting, commodities production or export. Through use of IMF resources, a borrowing country does receive financing which enables it to maintain higher levels of growth and imports while it is putting adjustment measures in place. Orderly adjustment can entail not just the cooling of overheated domestic demand, but also a wide range of measures to foster greater market orientation in major sectors, increase economic efficiency and rationalize productive capacity. IMF financing can also act to help stabilize world markets by reducing balance of payments pressures on countries forced to maintain production of exchange earning commodities regardless of the impact on world price.

On balance, we see the World Bank Group and the IMF programs as contributing positively to a borrower's ability to adjust to international economic developments, to develop a competitive minerals industry, and augment security of supply for minerals important to the world economy. Multiplied by the number of nations which receive such assistance, this can only augur well for efficient world minerals markets and supplies.

## U.S. Policy

I would like to close with a few remarks about the U.S. policy towards the international financial institutions and how policy decisions regarding these are coordinated within the Executive Branch.

The United States has pursued three broad policy objectives through its participation in the development institutions such as the World Bank and the regional development banks. The first of these, political/strategic, is based on the U.S. foreign policy role as leader of the non-Communist world. Fulfillment of this role has several specific dimensions as it relates to our participation in the MDBs. The long term dimension calls for the development of a more secure and stable world through the promotion of steady economic growth. The medium term dimension calls for effective development assistance programs in those countries which are of ongoing political/strategic importance. The short term dimension calls for rapid economic support for key countries which are in need of immediate assistance.

The second, and closely related, broad policy objective has to do with the preservation and growth of a free, open, and stable economic and financial system through the promotion of economic and social development. The MDBs do this by acting as catalysts for private investment and other private capital flows, as well as trade and technology flows; mobilizing and transferring government backed capital directly to developing countries; and encouraging rational LDC economic policies under free market concepts and global economic efficiency.

The third broad policy objective has to do with our humanitarian concern with alleviating poverty and improving the material well-being of the poor in developing countries. The MDBs are able to assist in the achievement of this objective by promoting overall economic growth and productivity in developing countries and by pursuing programs targeted directly at the poor.

U.S. policy towards the multilateral financial institutions is the responsibility of the Treasury Department in consultation with other concerned agencies. Major economic policy issues are deliberated by the Cabinet Council on Economic Affairs (CCEA) chaired by Treasury. An interagency staff level Working Group on Multilateral Aid (WGMA) chaired by Treasury, evaluates all loan requests made to the MDBs, and this group now includes the Department of Interior's Bureau of Mines to assist in the evaluation of minerals projects. The U.S. opposes many loan proposals which would generate excess supplies in world markets, which would displace private investment initiatives, or which would foster undesirable departures from a market oriented economy.

The National Advisory Council (NAC), chaired by the Treasury Department, is responsible for coordinating the financial aspects of U.S. participation in the international financial institutions. It also reviews the policies and practices of all agencies of the U.S. Government which participate in making foreign loans after deciding U.S. policies and positions, U.S. representatives to the institutions are instructed to implement them while participating in their deliberations and provides advice to the Secretary of the Treasury, as U.S. Governor of the international financial institutions, on the policies, and proposed transactions of the institutions.

This concludes my formal statement. I will be pleased to respond to the committee's questions.

The **Chairman**. Thank you very much, Mr. Cornell. On June 24 of this year, the Board of Directors of the American Mining Congress adopted a position on international lending policies and their effect upon the minerals and metals industry. In that position paper the AMC recommended five actions that should be taken by the executive branch. Those five recommended actions included:

First, that the Secretary of Treasury instruct U.S. representatives to international financial institutions to use their vote in a way that encourages Third World countries to develop projects aimed at diversification of their economies and to discourage development projects that expand capacity in mineral commodity markets that could be served adequately by private enterprise producers;

Second, that the Secretary of the Treasury provide complete accounting and disclosure of such actions;

Third, that the Secretary of the Treasury transmit to the President and the Congress an annual report with respect to the participation of the United States in the IMF and the World Bank and provide a listing of all applications filed for assistance at 90-day intervals that would pertain to establishing or enhancing the capacity of any commodity for export if the commodity is in surplus on world markets and if such assistance would cause substantial injury to a U.S. producer;

Fourth, that U.S. policy objectives include consideration of international commodity markets and individual industrial sectors in making loans so as to minimize adverse impacts and avoid Government subsidization of production of international commodities; and

Fifth, that U.S. participation in international financing institutions should be coordinated as to the development of its policies and programs.

Could you comment on the AMC's position as stated in that paper?

Mr. **Cornell**. Yes, sir; I'd be happy to.

Of the recommendations which you've listed, I think at least three are key and very important and constructive. On the recommendation to discourage development projects which expand capacity in minerals commodity markets, we do already carefully screen all proposed MDB mining and other projects to insure that they are compatible with the interests of both American producers and consumers as well as being economically, financially, environmentally sound.

We have been, I think, responsive to criticisms of that screening process. And that is a primary reason why, as I mentioned in my formal testimony, we have asked the Bureau of Mines to assist us in the interagency evaluation of MDB proposals for minerals projects.

As regards the recommendation to provide accounting and disclosure of actions, Public Law 97-377, provides for disclosure. That information is available in the annual report on U.S. participation in the World Bank and the IMF, as well as in the annual report of the National Advisory Council.

Concerning the recommendation that the United States should consider international commodity markets when it reviews MDB loans, and IMF drawings, this is already a standard element in our evaluation of all such actions. And, as I tried to make clear in the formal testimony, we strive to coordinate policies and programs between the development banks and the IMF. I think that's one of the advantages of having a single agency of the Government directing and coordinating U.S. policy toward these institutions.

The CHAIRMAN. I suppose there could be any number of examples on all sides of any issue, prove any fact they are trying to prove. And perhaps it's unfair as a result to pull out just one, but let me bring one out for the record because it is a matter of a great deal of concern to a great number of people and they've expressed that concern. This is not primarily strategic because the mineral is not in short supply. But as I recall, it was the IFC that made a—was involved in the loan to Mexico for the Cananea project. If my recollection is correct, that's a billion dollar loan to triple the output of that mine. And that is copper. And copper is scarcely in short supply.

Could you comment as to what happened or whether it was considered or whether you thought there was a difference in this case?

Mr. CORNELL. Yes, sir, I'd be glad to.

Cananea might be described in slang terms as a can-of-worms. The review of this project by Treasury and the other concerned agencies was neither cavalier or casual. There are many domestic interests that are involved in projects such as Cananea, not the least of which are the interests of U.S. manufacturers who would export to Mexico the mining, excavating, and other equipment to build the project in the first place.

As a matter of fact, Cananea benefited from considerable financing from the U.S. Export-Import Bank, multilateral banks, to fund U.S. exports of the capital equipment that has been used to build the project. Such financing is very much in the interest of U.S. exporters.

This project was designed to maintain Mexico's self-sufficiency in copper rather than to permit exports to the United States. At the time it was originally conceived, Mexico was traditionally not a significant copper exporter to the United States. Of course, current market conditions and Mexico's need to earn foreign exchange have changed that somewhat.

We originally supported this project in the IFC as well as in the Export-Import Bank. And that support was based on very extensive cofinancing and procurement opportunities for American firms. In our review at that time we expressed some concern regarding its financial and ecomomic viability, especially in view of the uncertain outlook for copper prices in the second half of the 1980's.

The Mexicans are proceeding with the project on a reduced scale and without IFC financing. The IFC will not provide funding for the project except as part of an IFC assembled international commercial banking syndication. Current conditions in the international capital markets make this syndication, frankly, impossible.

The project will be resubmitted to the IFC Board if the IFC should decide later to support it. A major consideration will be whether any of its output will be exported.

The Ex-Im Bank credit authorized in February of last year to support the sale of U.S. goods, which were mainly trucks and mining equipment for Cananea is valued at $165.5 million. On the first of February of this year the Ex-Im Bank authorized a financial guarantee—not a direct credit—to cover the commercial bank financing that is involved in this reduced package that the Mexicans are going ahead with. Ex-Im's decision to support this transaction was based on several considerations including—and this is very important—competition from much more attractive financing that was coming from other suppliers such as Canada, Japan, Australia, France, and Germany.

It was fairly clear that the project would proceed. The question was: Was it going to be built with U.S. equipment or with French or Australian or Japanese equipment?

It was clear to us that without Ex-Im's support U.S. manufacturers would lose sales to the other suppliers.

The CHAIRMAN. The initial decision by IFC, however, triggered the rest of it, did it not? If you hadn't been initially involved in financing the project you wouldn't have been called upon to make a judgment with respect to the Export-Import Bank's support of the suppliers' sales?

Mr. CORNELL. There probably would have been a request—and I can't tell you what the amount would have been—for Ex-Im Bank financing because I don't think that the IFC would, under any circumstances, have financed the entire project. As it turned out, the skeptical attitude of the United States toward the project when it came before the IFC Board, was a major contributing factor along with the change in market conditions, toward the IFC's eventual pulling back.

The CHAIRMAN. Well, I don't mean to focus on just one, but there is a great deal of concern about the processes that led to our participation in that, a great deal of concern in this committee as well as in the Senate and House of Representatives.

Would you provide for the record how you evaluate the market, what you look to, what sources you use for the information with respect to future markets in metals?

Mr. CORNELL. Yes, sir; I'd be happy to.

[Subsequent to the hearing Mr. Cornell supplied the following information:]

The criteria and procedures used for evaluating mineral projects is the same as that for all projects; nevertheless, the emphasis placed on each component would vary depending on the type of project being reviewed. For example, future demand and prices for minerals would be given particular attention in these types of projects as would prices for substitutes or complements. More generally, the administration attaches considerable importance to seeing that we support only those proposals that are clearly economically, financially, and developmentally sound.

The specific criteria used in the review of projects fall into four general areas: (1) project specific factors, (2) borrowing country macroeconomic and sector policies, (3) U.S. Government policies, and (4) the application of Bank policies and procedures.

The project specific factors include: (i) the priority of the project in the country's development strategy, (ii) its technical feasibility, (iii) the implementing agency's ability to carry out the project, (iv) the project's financial soundness, and (v) its economic rate of return.

The review of borrower's macroeconomic policies focuses on the country's ability to mobilize domestic resources and to utilize external resources effectively. Attention is paid, in particular to fiscal and monetary policies, the balance of payments and external debt servicing capacity. Sector policy reviews focus, in particular on pricing and marketing arrangements in that sector.

The U.S. Government policy considerations include concerns about: (1) debt arrearages, (2) expropriation, (3) narcotics, (4) availability of alternative sources of finance, (5) human rights violations, (6) cost overruns, and (7) is the commodity to be produced by the project considered to be in surplus on world markets.

The review finally examines each loan proposal to insure that the policies and procecures of the Bank are being carried out. These considerations include: (1) the percent of total project costs being financed by the loan, (2) procurement arrangements and whether international competitive bidding is applicable, (3) is there any retroactive financing involved, and (4) the appropriateness of the loan's specific terms and conditions.

All proposed loans are closely reviewed by the interagency Working Group on Multilateral Aid [WGMA], which is chaired by Treasury and which normally meets weekly. This Group includes some 11 interested agencies, including the Department of the Interior, and representatives of our Executive Directors at the World Bank.

The CHAIRMAN. Mr. Secretary, a Presidential statement issued in January of 1972 set a U.S. policy regarding foreign expropriations of U.S. overseas investments by recognizing nationalization as constituting a sovereign right of governments. This took place in an era of strident denunciations of multinational corporations in the United States, the development of the U.N. Declaration of Sovereignty of Natural Resources, and a surge of expropriations of large U.S. mineral investments in developing countries.

Looking back, didn't this policy statement weaken our ability to protect U.S. investments and negotiate adequate settlements for those who are expropriated?

Mr. CORNELL. Well, sir, it's hard to say what would have been. But I think the best way to answer your question would be to explain what that policy statement entailed and what kinds of activities on the part of the U.S. Government in defense of U.S. investors have resulted.

The policy, as you say, was set forth in a Presidential statement that was made in January 1972. We acknowledged the sovereign right of governments to nationalize foreign property within their borders, provided, however, that such actions, first, didn't violate any previous commitments they'd made; second, that they were carried out in accordance with rights of investors under international law. On which there is these rights include provisions which require that the actions be nondiscriminatory—that is, it would not be proper for country X to expropriate the properties of country Y when there were similar properties of countries A and B that were not expropriated; that the nationalization serve a public purpose, which is demonstrable in an international tribunal; and that nationalization be accompanied by prompt, adequate and effective compensation.

That is, there is a crucial distinction between expropriation without compensation, and nationalization where foreign investors are paid a fair price for their properties. The best example in recent times, during this adminsitration as a matter of fact, of a case where a major foreign country has nationalized in accord with international law—as distinguished from the expropriations associated with certain LDC's—was the case of the nationalizations in France. Major sectors of French industry were nationalized by law and by decree immediately after the election of the current socialist government.

But in that case, there was never any question that the French were going to provide prompt, adequate and effective compensation. And I can assure you that the investment office at the Treasury, which happens to be within my portfolio, spent a major amount of time watching what the French were doing and sometimes negotiating and consulting with them to insure that U.S. interests were protected.

The CHAIRMAN. I suppose pointing to the French is the easiest of several though, isn't it?

Mr. CORNELL. That's true. Many countries expropriate without compensation. In cases where that does happen we use every kind of diplomatic and legal means of support we can for the U.S. investors. I believe we do a fair job in first hearing what expropriated U.S. investors have to say and then pursuing their case using all measures appropriate between governments.

The CHAIRMAN. Do you really believe we are getting—that that policy as you've enunciated it, is effective in action?

Mr. CORNELL. I've seen some cases where it has been. However, I can't call any of them immediately to mind.

The CHAIRMAN. Can you recall some that haven't been?

Mr. CORNELL. Yes.

The CHAIRMAN. Could you call any of them immediately to mind?

Mr. CORNELL. I believe there is one case in Australia which has dragged on entirely too long.

The CHAIRMAN. Is there any significance to the fact you can remember the ones that haven't worked and can't remember the ones that have?

Mr. CORNELL. I don't think so. No. sir.

The CHAIRMAN. I wonder.

Largely because of depressed minerals markets worldwide there is increasing evidence that a number of LDC's are moving away from national ownership of mineral projects and are now courting private investors. Even Cuba is soliciting private investment. How assured can U.S. private investors be that a new surge of resource nationalization will not erupt and we will reenter a period of nationalization?

Mr. CORNELL. Sir, I don't think we can ever be sure that a change in viewpoint on nationalizations among the major mineral producing countries will not take place. You are correct, however, and we share your observation and belief, that changes in basic perceptions of foreign investment have resulted in increasing encouragement of private investment, and far less of the ideological antipathy that discouraged private investment in the past.

As a matter of fact, it appears the investment climate is improving. So on that basis we believe, although we can't be sure, that a shift back to the less enlightened days of a decade ago is probably not likely.

What are the changes? First, in the developing countries there seem to be a general decline in the level of concern about the negative impacts of foreign investment in general, and of foreign private investment in particular. Increasingly, the developing countries are becoming much more sophisticated in their economic management perceptions. After all, many of their leaders have gone to the Harvard Business School.

The CHAIRMAN. Does that help?

Mr. CORNELL. That helps at least to improve their perceptions.

The CHAIRMAN. I see.

Mr. CORNELL. It does not help in the bargaining process.

The CHAIRMAN. At least it wasn't Wisconsin.

Mr. CORNELL. Second, for this reason they do have an increased appreciation of the benefits that such investment can provide. And they discovered that when they foster a hostile climate they don't get the investment.

And third, as compared to 10 or 15 years ago, there is much more familiarity with the way multinational corporations work. They are less and less, I think, viewed as evil monsters—the role that mythology in some host countries alloted them.

The CHAIRMAN. Well, it was viewed in this country as an evil word.

Mr. CORNELL. Well, that's true, too.

The CHAIRMAN. I was really——

Mr. CORNELL. That myth has faded.

The CHAIRMAN. I was really surprised at the success of the campaign to make "multinational" an epithet. But I found a very effective campaign in this country on college campuses less than 10 years ago——

Mr. CORNELL. That's right.

The CHAIRMAN [continuing]. Where "multinational" was synonymous with other words that were less printable.

Mr. CORNELL. That's right. But even that view in the United States has lost its attraction to a large degree.

The CHAIRMAN. I hope that's true. I am concerned that although that trend has, trend toward nationalization may have moderated or even reversed, I see no abatement of the trend that requires at least a majority domestic ownership in several of these countries, both those that formerly had nationalization policies and other countries that did not.

And that appears to be causing us more than a little bit of trouble. Some of our closest friends use it. Australia and Canada come readily to mind. What are you doing with respect to Canada's Investment Review Board?

Mr. **Cornell**. We are doing a great deal with respect to Canada's so-called FIRA, the Foreign Investment Review Agency. It's very instructive to observe what has happened, really especially in the minerals field and even more especially in the energy field in Canada. Now, FIRA and the new energy policy aren't quite synoymous; they are separate policies.

FIRA is an institution. The NEP is a policy that was imposed on top of that institution.

The administration was much exercised by both the draconian way in which FIRA was being administered a couple of years ago, and by the way we saw the NEP, the new energy policy being designed, implemented, and legislated by the Canadian Parliament. I, spent about 3 months along with many other people from the U.S. Government practically commuting to Ottawa trying to point out to the Canadians what our concerns were in this regard.

The Canadians were not altogether in agreement with what we had to say. And our statements fell largely on deaf ears. But they seem to have changed their tune in the meantime. This occurred not so much in terms of formal, official government actions but rather in pragmatic responses by the Canadian Government to what occurred. For example, in the energy field the immediate impact of the installation of the NEP was a massive disinvestment in Canadian energy by United States and other foreign firms.

It's well known that following imposition of the NEP the population of oil rigs in the continental United States jumped by 1,000 or 2,000 in the course of about 3 months, leaving Canada basically denuded of new exploration activity. The Canadians, I think, learned a lesson. And it's safe to say that today, although the NEP exists in name and is still enforced, the administration of the NEP as well as its legislated form have been much modified. Here's a case where a change in policy was brought about by a reaction on the part of the private foreign investing community; and this reaction essentially changed Canadian behavior.

So far as the FIRA is concerned, we found that its provisions establishing performance requirements, dictating R&D activity, setting levels of exports, all of which the potential investors had to agree to even before he had a negative impact on private sector views of Canada, was permitted to invest in Canada. FIRA was at its height a couple of years ago, both the United States and many other countries expressed deep concern about it. The result has been that the administration of the FIRA has been much moderated, and we believe made more sensible.

I might add in that respect that we took a case to the General Agreement on Tariffs and Trade, in effect, we took Canada to court. The case has not been resolved yet, but we do have—and this goes back to something I said before—avenues use in international fora which are available to pursue these issues. And our hope is that the GATT will find that the United States has been correct in its assertions about the FIRA.

The **Chairman**. How many other agencies were involved as well as Treasury in terms of negotiations or consultation with the Canadians on FIRA?

Mr. **Cornell**. The principal agencies that were involved were the Department of State and Treasury. Also involved were the U.S. Trade Representative and the Department of Commerce. The Department of Energy participated in the Washington discussions, because it was an energy-related issue.

The **Chairman**. Were you involved at all in the decisions made by the Department of the Interior with respect to reciprocity and the Canadians on minerals?

Mr. **Cornell**. No, sir. That was basically a Department of the Interior decision. There is no interagency process.

The **Chairman**. Shouldn't there be?

Mr. **Cornell**. Well, the Mineral Lands Leasing Act gives the responsibility to the Secretary of the Interior.

The **Chairman**. I understand that. But while you're negotiating one set of problems under one set of laws another department of the government is negotiating with respect to a different set of problems under a different law, and you're telling me that you don't talk to each other?

Mr. **Cornell**. I shouldn't say we don't talk to each other.

The **Chairman**. I hope you both read the same newspapers.

Mr. **Cornell**. We surely did talk to each other. And we were aware that there was an MLLA reciprocity issue involved in the Canadian case.

The **Chairman**. In that instance we said there was no bar under the Mineral Leasing Act. At the same time you were saying that their treatment of United States under FIRA was discriminatory.

Mr. **Cornell**. That's right.

The **Chairman**. Doesn't that seem a little anomalous?

Mr. **Cornell**. At the same time we were absolutely delighted to see all that Canadian capital coming down and developing our mineral industries because from our perception the Canadians were shooting themselves in the foot. If we had declared them nonreciprocal, none of that outflow of capital from Canada would have occurred.

The **Chairman**. Nor would U.S. capital have been available for investment in mineral exploration in Canada.

Mr. **Cornell**. That's true. But it was already there.

The **Chairman**. One of the results of tighter credit worldwide and the need of debtor countries to redirect allowable credit to debt refinancing will likely be the slowdown of new mineral project expansions. Financial uncertainty has already slowed anticipated mineral project expansion, while generally the forecasts for growth in world mineral demand are much lower than they were in the mid-1970's and we currently have excess capacity for most mineral commodities, there could be trouble in the last half of the 1980's if demand increases rapidly and greatly and the adequate capacity has not then been developed.

Is that a realistic possibility?

Mr. **Cornell**. Yes, sir. I share your analysis. I think that possibility is realistic and that on the evidence of the strength of the current upturn in the business cycle, it may be possible that a capacity shortfall of excess demand on may emerge near the end of the decade.

This outcome is not certain, of course. The present overcapacity, as we know, was based on judgments that there would be insufficient capacity through most of the decade of the 1970's. Those judgments were not only official judgments, they also were overwhelming the judgments of private firms.

On the upside, private investors tended to be a bit overoptimistic, in view of the situation of the last few years. But I think it's legitimate to fear that on the downside they may also be a bit too pessimistic today.

The CHAIRMAN. Very well. Thank you very much for your testimony today. I am concerned that we develop a policy when we have relationships with foreign governments and foreign entities with respect to the loans, the financing and the various other issues that we've been discussing, that we include in that some conscious deliberation of U.S. interests with respect to the availability of critical materials. That would seem to me that to direct our efforts, our attention, toward stimulating the diversification of sources of critical materials and the investment in critical materials rather than those which are in adequate or surplus supply.

It seems to me that we haven't really done that except as kind of a sidelight to the major thrusts of such negotiations or considerations. I would welcome your comments or your suggestions as ways in which we could strengthen that and make sure that it is strengthened.

Mr. CORNELL. Yes, sir. Well, I certainly can understand your concern. In my last incarnation before I joined the Treasury Department I was for a couple of years a stockpile man. So I learned something about minerals issues and problems.

The CHAIRMAN. Well, maybe you can subvert Treasury from inside.

Mr. CORNELL. I think the Treasury is more sympathetic than you may perhaps suspect looking at it from the outside.

The CHAIRMAN. Thank you very much. I appreciate your testimony.

[Subsequent to the hearing the following answers to additional questions were submitted by Mr. Cornell:]

JAMES A. MC CLURE, IDAHO, CHAIRMAN

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LOWELL P. WEICKER, JR., CONN.
PETE V. DOMENICI, N. MEX.
MALCOLM WALLOP, WYO.
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MICHAEL D. HATHAWAY, STAFF DIRECTOR
CHARLES A. TRABANDT, CHIEF COUNSEL
D. MICHAEL HARVEY, CHIEF COUNSEL FOR THE MINORITY

United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, D.C. 20510

July 25, 1983

Mr. Robert A. Cornell
Deputy Assistant Secretary for
Trade and Investment
U.S. Department of the Treasury
15th Street and Pennsylvania Avenue N.W.
Washington, D.C. 20220

Dear Mr. Cornell:

Following up the oversight hearing on the geopolitics of strategic and critical materials held before the Energy and Natural Resources Committee on July 22, 1983, the enclosed questions were developed. I would appreciate it if you could provide written answers to these questions within 10 working days so that they may be part of the record.

Sincerely,
James A. McClure
James A. McClure
Chairman

Enclosures
JAM/BT:dar

## QUESTIONS FROM THE MINORITY

### Questions for all witnesses

(1) What steps would you recommend the U.S. government take to formulate a foreign policy that has, as a goal, reliable access for mineral investments abroad for national economic security?

(2) In your view, has the international political and economic climate, in recent years, been less favorable to U.S. investments in developing countries? If yes, what factors have contributed to this situation?

(3) Does foreign mineral investment still provide an effective means to manage and limit resource vulnerability?

### Question to Mr. Robert A. Cornell, The Honorable Alfred E. Eckes, Jr., and Mr. Christian R. Holmes

Is it true that minerals exploration has been assigned increasingly low priority in U.S. bilateral economic aid policy?

Question #1: What steps would you recommend the U.S. Government take to formulate a foreign policy that has, as a goal, reliable access for mineral investments abroad for national economic security?

Answer: In his minerals policy statement of April 1982, the President outlined a number of steps this Administration will undertake, which in total will address this issue. All programs of this policy are underway. First, a program is underway to expand and improve information exchange with other nations on minerals data and information. Specifically, the Administration is establishing working contacts with the European Communities and other free world countries for exchange of information on materials research and development activities. The Administration is strengthening the Regional Resource Officer (RRO) program to improve the exchange of information on mineral investment problems, to improve the consistency of statistical reporting, and to consult on issues relating to selected strategic minerals. This network of exchange includes as well cooperation among Federal and state agencies and with the private sector.

Second, the Trade and Development Program (TDP) of the International Development Cooperation Agency (IDCA) is giving new emphasis to strategic minerals and metal-related development activities, in accordance with its legislative mandate. This activity will broaden opportunities for U.S. private sector to participate in the development and diversification of foreign sources of supply of strategic and critical minerals.

Third, the Administration will initiate and conduct periodic and ad hoc consultation and coordination of the strategic and security policy aspects of non-fuel minerals and associate processing capabilities among industrial nations which are consumers of key materials. Through these mechanisms, the Administration recognized the need to create and maintain open international markets for critical materials and the need of producing and consuming nations to cooperate to their mutual trade benefit.

Finally, the entire issue of materials availability and the national materials policy of this Administration is being coordinated through the Cabinet Council on Natural Resources and the Environment. This will ensure high level consideration of important materials policy issues on a timely basis.

Question #2: In your view, has the international political and economic climate, in recent years, been less favorable to U.S. investment in developing countries? If yes, what factors have contributed to this situation?

Answer: Investment data do not support the view that the international political and economic climate in developing countries has become less favorable in recent years. The stock of U.S. direct investment in developing countries increased by 76% from 1977 to a level of $56.1 billion in 1981.

Economic nationalism which often takes the form of onerous restrictions and conditions on foreign direct investment continues to be a problem. However, the climate for foreign direct investment appears to be improving. The recent worldwide recession and the spread of labor-saving technology have made these restrictive policies less attractive to developing countries. There have also been changes in fundamental perceptions of developing countries toward foreign direct investment.

Some of these changes in perceptions are:

-- a general decline in the level of concern about the negative impacts of foreign investment;

-- an increased appreciation of the benefits foreign investment can provide; and

-- increased familiarity with the operations of transnational corporations by the LDCs.

Question #3: Does foreign mineral investment still provide an effective means to manage and limit resource vulnerability?

Answer: Resource vulnerability takes many forms, and may be caused or aggravated by trade and investment restrictions. Such restrictions can create artificial shortages and expectations of shortages, to which countries sometimes respond with additional restrictions in an effort to safeguard their industries. This situation is best combatted by the promotion of a free, open, multilateral system for trade and investment, which provides reasonable assurance for continued access to resources by all potential consumers. An open trade and investment system facilitates increased and efficient allocation of capital, thereby increasing supplies and eliminating artificial shortages.

Question to Mr. Robert A. Cornell,
The Honorable Alfred E. Eckes, Jr., and Mr. Christian R. Holmes

Question: Is it true that minerals exploration has been assigned increasingly low priority in U.S. bilateral economic aid policy?

Answer: Sector priorities for the U.S. development assistance program have been determined by Congressional legislation, setting up functional accounts for agriculture, population planning, health, education and energy. Mineral exploration has not been a priority.

The CHAIRMAN. Our next witness will be Hon. Alfred E. Eckes, Jr., Chairman of the U.S. International Trade Commission.

Can we have your complete statement which will be made a part of the record, and you'd be invited to summarize or proceed as you desire.

## STATEMENT OF HON. ALFRED E. ECKES, CHAIRMAN, U.S. INTERNATIONAL TRADE COMMISSION, ACCOMPANIED BY BILL GEARHART, ASSISTANT GENERAL COUNSEL; AND LASZLO BOSZORMENYI, METALS AND MINERALS SPECIALIST

Mr. ECKES. Thank you, Mr. Chairman, Senator Hecht. For the record let me introduce the two people at the front table with me. On my right is Bill Gearhart, one of our assistant general counsels. And on my left is Mr. Laszlo Boszormenyi, who is one of our metals and minerals specialists.

It is a pleasure for me to discuss with you the role of the International Trade Commission in providing relief to domestic industries effected by the import of strategic and critical resources from foreign nations. And at your suggestion I will offer a very brief summary of my statement, Mr. Chairman, then be pleased to respond to questions.

Let me first say as one who had the opportunity several years ago in an incarnation as a college professor to write a book on strategic and critical materials how important I consider the subject of your hearings. As a historian it's my judgment that the struggle for minerals helps to explain much of our 20th century international history.

I would cite another historian, T.A. Ricard, saying that he was surely correct when some years ago he wrote that the "miner left his mark as the herald of empire, and the pioneer of industry, trade follows the flag but the flag follows the pick."

Nonetheless, as one who reviews our own history of mineral stockpiling, it's astonishing how we as a nation first learned and then forgot and then had to relearn the lessons of resource vulnerability and dependence on foreign suppliers. During World War I we learned about the significance of supply dislocations, gave emphasis to our stockpiling, but the Government as usual, faced with competing budgetary priorities failed to act on the lesson. So at the time of Pearl Harbor our actual stockpiles contained no cobalt and very little chromium and manganese.

When the Korean war broke out a few years later the situation was only slightly better.

Mr. Chairman, in lack of preparedness in the past I believe that hearings such as these are necessary to emphasize periodically the importance of the raw material considerations and I commend the committee for its undertaking; an important one in this direction.

Now let me provide a brief discussion of the Commission's role. The International Trade Commission is an independent agency established in 1916 as the Tariff Commission for the purpose of providing advice and support to Congress and to the Executive on tariff and trade matters.

Not only do we have a broad mandate for factfinding but the Commission has an important responsibility for administering our import relief laws in a quasi-judicial way. I should emphasize, we make no policy. We are impartial and nonpartisan in our approach. And we stand ready to assist your committee's work on metals and minerals problems as part of our broad responsibility to aid Congress on matters related to international trade.

In the prepared statement I discuss a number of the import relief statutes available to domestic producers who are either experiencing difficulty adjusting to increased imports or who are competing with unfairly traded imports.

Among the unfair trade practices we encounter regularly are subsidies, dumping and infringement of U.S. patents, copyrights, and trademarks.

Let me emphasize one point about our unfair trade investigations. Since 1980 the Commission has conducted over 300 investigations involving charges of dumping and subsidies. But none of these have involved strategic and critical materials. On the surface this statistic seems somewhat surprising in light of the growing involvement of governments in the production and processing of minerals and metals.

I should note that in dealing with downstream products like steel, the Commission and the Department of Commerce, who share a bifurcated jurisdiction, have found numerous instances where unfair government subsidies and foreign dumping injured a domestic industry.

Finally, let me comment on research and factfinding responsibility. As part of our broad responsibility to advise Congress on significant international trade developments which could have implications for the domestic industry's competitive posture in United States and foreign markets the Commission monitors minerals trade and trends and evaluates changing competitive conditions.

From our trade monitoring program we publish quarterly and annual publications offering information on significant shifts taking place in U.S. product trade.

In the prepared text I have summarized some of the recent data and trends. One of particular interest to the committee, Mr. Chairman, is the growing involvement of governments in mining and minerals processing. With government involvement seems to have come concessionary loans and subsidies. It's my understanding that some of these subsidies and concessionary loans might be countervailable under the U.S. law as unfair trade practices.

It's my understanding, also, that loans from the World Bank, the Export-Import Bank, and other U.S. aid programs will generally not be countervailable under present U.S. law. I should emphasize that the Department of Commerce has the responsibility to determine which loans and concessions are countervailable, while the International Trade Commission focuses on the related issue of injury to the domestic industry.

Mr. Chairman, Senator Hecht, that concludes my introductory remarks. I would be delighted to respond to any questions you might have at this point.

[The prepared statement of Mr. Eckes follows:]

## STATEMENT OF
## ALFRED E. ECKES, CHAIRMAN
## U.S. INTERNATIONAL TRADE COMMISSION
## BEFORE THE
## COMMITTEE ON ENERGY AND NATURAL RESOURCES
## U.S. SENATE, JULY 22, 1983

Mr. Chairman and members of the Committee, I appreciate the opportunity to testify before you today.

The Chairman has asked that I describe the role that the International Trade Commission plays in providing relief for domestic industries affected by the importation of strategic and critical mineral resources from foreign sources.

However, before addressing this issue, please let me briefly describe the International Trade Commission for those of you who may not be familiar with our mission and function.

We are an independent agency established by Congress in 1916 for the purpose of providing advice and support to the Congress and the President on tariff and trade matters. The role of the Commission has evolved within this framework over the years. The Commission initially was primarily concerned with tariff matters. However, as the tariff declined in importance as a result of successive bilateral and multilateral trade agreements and other trade barriers assumed greater importance, new functions were transferred to the Commission. To reflect this evolution of function, Congress in 1975 changed the name of the agency from the U.S. Tariff Commission to the U.S. International Trade Commission.

Today, the Commission, in addition to providing advice and information to the Congress and President on request, makes findings and recommendations to the President under the escape clause law and section 22 of the Agricultural Adjustment Act. It also makes the injury findings under the antidumping and countervailing duty laws, and makes determinations and issues orders concerning unfair trade practices under section 337 of the Tariff Act of 1930. Congress substantially revised most of these laws as recently as 1974 and 1979.

Since its establishment, the Commission has been an independent agency headed by six Commissioners nominated by the President and confirmed by the Senate. No more than three Commissioners may be members of the same political party. Congress reaffirmed and strengthened the independence of the Commission in the Trade Act of 1974, in view of its belief that certain changes were necessary "to prevent the Commission from being transformed into a partisan body or an agency dominated by the Executive Branch." 1/ Congress extended the length of Commissioner terms of office from 6 to 9 years, authorized the Commission to be represented in a court by its own attorneys, provided that the Commission's budget would be transmitted to the Congress (without revision) by the President, and changed the procedure by which the Commission chairman and vice chairman were designated.

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1/ U.S. Senate, Committee on Finance, Trade Reform Act of 1974, S. Rept. No. 93-1298 (93d Cong., 2d Sess.) 1974, p. 115.

The Commission has a staff of slightly over 400 persons, of whom about 90 are industry analysts specializing in various commodities, and others are attorneys, economists, investigators, tariff specialists, and support staff.

Now let me turn to a more specific discussion of the Commission's role in the minerals area. As a result of authority to administer import relief laws and to conduct factfinding investigations and research on trade issues, the Commission is involved with matters of direct concern to this Committee.

I will first describe the import relief laws. None of these trade laws under which we are authorized to act specifically directs us to take into account the impact of imports on domestic producers of strategic or critical mineral resources or otherwise specially treat producers of such resources.

The trade law closest in providing such direction and authority is section 232 of the Trade Expansion Act of 1962 (19 U.S.C. § 1862), which provides for "safeguarding national security." That provision permits, among other things, interested parties to file petitions with the Secretary of Commerce alleging that imports of an article threaten to impair the national security. If the Secretary so finds, he advises the President; and if he agrees, the President must adjust the imports of the article and its derivatives so that such imports will not threaten to impair the national security.

Commerce instituted an investigation under section 232 with respect to imports of ferroalloys in August 1981 at the request of the Ferroalloy Association. Commerce sent its report to the

President in August 1982, but its findings were confidential and have not been publicly released. No action has been officially taken as a result of the investigation. However, in December 1982, Commerce announced a Presidential decision to upgrade stockpiled manganese and chromium ores to improve stockpile readiness and to maintain domestic ferroalloy furnaces and processing capacity.

While none of our statutory authorities specifically directs us to consider the impact of imports of strategic or critical mineral resources per se, we may nevertheless be called upon to examine the impact of imports of articles falling within that definition under at least six different statutory authorities--the escape clause law, the law providing relief from market disruption from Communist countries, the antidumping and countervailing duty laws, section 337 of the Tariff Act of 1930 (which concerns unfair import practices), and section 332 of the Tariff Act (which frequently involves studies of competitive conditions between imported and domestic articles). I shall briefly describe each of these provisions and the Commission actions they direct.

Escape clause actions.--In recent years, the Commission has conducted five investigations (all in 1977-78) under the escape clause law with respect to articles which arguably fall within the definition of strategic and critical materials-- low-carbon ferrochromium, high-carbon ferrochromium (two investigations), unalloyed unwrought zinc, and unalloyed unwrought copper.

The escape clause law, which is found in section 201 of the Trade Act of 1974 (19 U.S.C. 2251), sets forth the procedure through which industries can petition for relief in the form of higher tariffs or quotas, which may involve the U.S.' "escaping" for a period of time from its international trade obligations. In this regard U.S. law conforms to article XIX of the General Agreement on Tariffs and Trade (GATT).

Investigations are instituted by the Commission on petition by an industry or at the request of the President, the U.S. Trade Representative, the House Committee on Ways and Means, the Senate Committee on Finance, or on the Commission's own motion. If the Commission determines that increased imports of the imported article are a substantial cause of serious injury or threat to the domestic industry, the Commission recommends to the President relief in the form of tariffs or quotas, or, alternatively, adjustment assistance. The Commission must conduct its investigation and make its determination and any recommendation within 6 months of the filing of a petition or request. If the relief recommended is in the form of tariffs or quotas, the President has 60 days in which to advise Congress of the action, if any, he plans to take. In addition to increasing tariffs or imposing a quota, the President may negotiate orderly marketing agreements with foreign suppliers. Relief is temporary and may initially be provided for up to 5 years and extended for up to an additional 3 years.

As stated earlier, the Commission has conducted five escape clause investigations involving products which may be considered strategic and critical materials. It made affirmative determinations in three of the five--in the two high-carbon ferrochromium cases and in the copper case. In the two high-carbon ferrochromium cases the Commission recommended that tariffs be increased; and in the copper case, it recommended that a quota be imposed. Relief was provided only in the second high-carbon ferrochromium case, and that relief was in the form of tariff, but in lesser amounts and for a shorter period than the Commission had recommended. The relief was imposed in November 1978 for a 3-year period, and was extended in November 1981 for 1 additional year. The relief terminated in November 1982. No relief was provided in the first high-carbon ferrochromium case or in the copper case, the President having concluded that relief was not in the national ecomomic interest.

The Commission made negative determinations in the low-carbon ferrochromium and zinc cases on the ground that imports, though increasing, were not a "substantial cause" of injury. The statute defines "substantial cause" as a cause which is "important and not less than any other cause". In both cases the Commission found that other causes were more important causes of injury. In the low-carbon ferrochromium case the Commission concluded that a shift in technology--specifically the introduction of the Argon-Oxygen-Decarburization refining process in producing stainless steel, which permitted the use of less costly high-carbon ferrochromium--to be a more important cause of injury. In the zinc case, the Commission found a decline in zinc consumption to be a more important cause of injury. The Commission traced this decline to two factors--(1) depressed economic conditions in 1974-76, and (2) the use of substitute materials, especially in the auto industry, where the weight of zinc diecastings used in the average car declined 50 percent between 1976 and 1978.

Market disruption from Communist countries.--Section 406 of the Trade Act of 1974 (19 U.S.C. 2436) provides for relief from market disruption from Communist countries. Section 406 is similar in many respects to section 201, the escape clause law, but investigations are completed in a shorter period (3 months versus 6 months) and the statutory standard is different. Market disruption is defined as occurring when imports are increasing rapidly so as to be a significant cause of material injury or threat to a domestic industry. The Commission has conducted only nine investigations under this provision (versus 48 under the escape clause law), largely because trade with Communist countries is relatively small. None of the nine cases involved strategic or critical minerals.

Antidumping and countervailing duty provisions.--The Commission, together with the Department of Commerce, conducts investigations under the antidumping and countervailing duty provisions of title VII of the Tariff Act of 1930 (19 U.S.C. 1671). The present U.S. laws are based on the international antidumping and subsidies codes negotiated in 1979 under GATT auspices.

The antidumping law provides for the levying of special duties to offset sales at less than fair value. An article is being dumped when, for example, it is being sold in the United States at a lower price than in its home market or is being sold in the United States at a price below its cost of production. The countervailing duty law provides for the levying of special duties to countervail (offset) subsidies provided by foreign governments.

Actions under the two laws follow very similar procedures and the two laws share numerous statutory definitions. Petitions are filed simultaneously with Commerce and the Commission. Commerce determines whether there is dumping or a foreign subsidy, and the Commission determines whether a domestic industry is being materially injured or threatened with material injury by reason of such dumping or subsidy. As a general rule, no dumping duty or countervailing duty can be imposed unless the Commerce Department has found dumping or a subsidy and the Commission has found the requisite injury stemming from that dumping or subsidy. However, in the case of countervailing duty investigations, no injury determination is required with respect to articles imported from countries which have not signed the international subsidies code. Mexico is such a country.

Although the Commission has conducted over 300 investigations under the present antidumping and countervailing duty provisions since they went into effect in 1980, none has involved strategic and critical materials. However, as a result of actions taken under predecessor countervailing duty legislation, countervailing duties have been in effect since 1977 on unwrought zinc from Spain and since 1979 on certain ferroalloys from Spain. The duties collected range from 2.4 percent ad valorem to 3.36 percent ad valorem.

Also, under the old law, the Commission made a negative injury determination in a March 1979 final antidumping case involving silicon imports from Canada. The Commission found that with consumption increasing, producers' shipments rising, sharply reduced producers' inventories, the upward turn in profits, and rising prices, there was no likelihood of injury to the domestic industry. Moreover, the only Canadian producer of silicon metal for export to the United States had no excess capacity with which to threaten the domestic industry.

Section 337.--Section 337 of the Tariff Act of 1930 (19 U.S.C. 1337) provides for relief from unfair trade practices. Section 337 declares unlawful any unfair methods of competition and unfair acts in the importation of articles into the United States, or in their sale by the owner, importer, consignee, or agent of either, the effect or tendency of which is to destroy or substantially injure an industry efficiently and economically operated in the United States, or to prevent the establishment of such an industry, or to restrain or monopolize trade and commerce in the United States. If the Commission finds a violation of section 337, it can issue an order excluding the subject articles from entry into the United States or can order the violating parties to cease and desist from their actions. Investigations must be completed in 12 months (18 months in more complicated cases). The President may disapprove Commission orders within 60 days of their issuance for "policy reasons," but he rarely does so.

Most section 337 investigations have involved allegations of patent, trademark, or copyright infringement. Exclusion orders are often appropriate remedies in such cases because of the legal rights which patent, trademark, and copyright holders have. Unfair practices involving dumping or foreign subsidies are not actionable under section 337 but only under the antidumping and countervailing duty laws.

None of the more than 100 investigations which the Commission has conducted under the provision since 1975 when it was last substantially revised has involved strategic or critical minerals. However, imports refined in accord with a patented refining process and entered without the approval of the U.S. patentholder would appear to be a proper subject for a section 337 action.

Section 332. The final provision of law I would like to discuss is section 332 of the Tariff Act of 1930 (19 U.S.C. 1332). This is a general provision of law under which the Commission can investigate and report on almost any matter having to do with tariffs or trade. Such investigations frequently involve studies of the conditions of competition between a U.S. industry and its foreign counterparts.

Such investigations are conducted on the Commission's own initiative or at the request of the President, either House of the Congress, the House Committee on Ways and Means, or the Senate Committee on Finance. No relief can directly come from such investigations, but the information gathered may prove helpful to the President, the Congress, or the industry in determining what course of action to take. None of the Commission's section 332 investigations has involved strategic or critical materials in recent years.

From our factfinding and quasi-judicial responsibilities I turn now to a brief discussion of our research and analysis. As part of our broad mandate to advise Congress and the Executive branch of significant international trade developments which could have implications for the domestic industry's competitive posture in U.S. and foreign markets, the Commission both monitors mineral trade trends and evaluates changing competitive conditions. Our study of minerals and metals is part of a comprehensive trade-monitoring program, which enables us to compare import levels with U.S. consumption levels in 650 key commodity groups, involving some 3,000 products. This trade-monitoring system provides the basis for quarterly and annual publications offering the public information on significant shifts taking place in U.S. product trade.

These data point out, for example, that the U.S. trade deficit in minerals, metals, and certain manufactured or fabricated products narrowed in the past 5 years from $12.8 billion in 1978 to $6.7 billion in 1980 before rising sharply to $14.5 billion in 1982. The shifts in the trade balance resulted more from variations in export levels than from changing import patterns, although imports rose steadily during the 1978 to 1981 period before declining 15 percent in 1982.

Imports rose an average rate of about $3.4 billion a year, from about $24 billion in 1978 to $34 billion in 1981, averaging about 10 percent of domestic consumption for the period. These upward trends were reflected in a number of minerals and metal markets such as steel, ferroalloys and aluminum. The large sector trade deficit continued in 1982, despite the decline in imports to $29 billion. There were significant declines in exports, due in part to the rising value of the dollar and to the economic downturn affecting both industrialized and developing nations. Export of mineral and metal products increased sharply to $25 billion in 1980, from nearly $12 billion in 1978, before falling to $15 billion in 1982. The fluctuations during the period were due largely to changes in exports of steel, precious metals, copper, aluminum, lead and nickel.

As the Committee knows, for many minerals, the United States has limited or no known reserves. For these, imports supply the major part or all of domestic demand. While the U.S. ores and metals industries enjoy relative strengths in the large size and proximity of the U.S. market and a skilled domestic labor force, there are major weaknesses. These include low profitability coupled with low levels of capital formation, sluggish growth in domestic demand, and the development of basic metals industries abroad. In the lead, zinc, steel and copper industries these conditions are particularly evident.

According to our analysts, the competitiveness of the U.S. minerals and metals sector varies widely. Among the important factors are comparative cost structures and the quality and availability of domestic mineral reserves. For example, certain base metals processed from various ores and concentrates through smelting and refining cannot be produced in the United States as economically as in foreign countries, due in part to relative low-grade domestic deposits and relatively high processing costs. On the other hand, the United States is highly competitive and one of the world's largest producers of molybdenum and magnesium.

An important part of the Commission's work involves making competitive assessments of domestic industries. It is an area which is systematically addressed in a series of tariff and trade summaries which we are now completing covering all commodities traded by the United States. With regard to strategic and critical materials, our trade summary reports have noted four general trends:

-- First, much of the international mining industry in developing or underdeveloped countries has begun the process of upgrading ores to more advanced material before exporting to other countries. This development most likely will continue to have an adverse effect on investment in new plants, on capacity levels, and on production in the mining and metals industries in the United States.

-- Second, over the past two decades, the ownership of foreign mining properties has changed in favor of increased participation by host governments, as those governments nationalized or expropriated properties. As an example, this trend in the copper industry has in the past decade reduced concentration and increased the number of independent operating facilities. This has resulted in a major shift in ownership of production and processing capacity to foreign nations.

-- Third, increased government ownership has been accompanied by a more active role for government in marketing and attempts to diversify markets. Because the metals industries of developing countries often contribute significantly to their national economies and export earnings, these industries are often perceived as important national assets and as being critical to industrialization efforts.

-- Finally, business arrangements between domestic and foreign firms in the zinc, copper, and titanium industries have provided or could provide the financial leverage to address problems of outdated or underutilized plant and equipment, regulatory requirements, and the global recession. For example, in an effort to raise capital to finance a major expansion and modernization program at a domestic copper-producing facility, a major domestic producer entered into a joint venture with a foreign firm. Under the agreement, the foreign firm will contribute cash to the venture and share in the cost of modernization in return for a share of the production.

Mr. Chairman, this concludes my summary of the ways the International Trade Commission provides assistance and relief to domestic industries. Let me emphasize our interest in continuing to assist the Committee's work on metals and minerals problems as part of our broad responsibility to aid Congress on matters relating to international trade. It has been a pleasure to testify today, and I would be delighted to respond to any questions the Committee may have.

The CHAIRMAN. I don't mean to be picky, but I am confused by one. On page 4 of your statement you refer to the fact in the middle paragraph, you refer to six, the definition "at least six different statutory authorities" and then you proceed to list five. Did we lose one or did I misread that?

Mr. ECKES. Maybe we counted wrong, Senator. The escape clause, market disruption, two. Antidumping and countervailing duty we would probably count as separate statutes.

The CHAIRMAN. They are—both come in the same section of the same statute?

Mr. ECKES. Both come in the same section but one is section 701 and the section is section 731. They are slightly different. So I think that explains the apparent——

The CHAIRMAN. Right.

Mr. ECKES [continuing]. Disparity. We should have put in a comma, in short.

The CHAIRMAN. All right. I wasn't certain whether you meant that or whether one had been omitted. I looked throughout the balance of your statement and I found five listed as well, because they are combined for discussion purposes later.

On page 3 of your testimony you state that "None of these trade laws under which we are authorized to act specifically directs us to take into account the impact of imports on domestic producers of strategic or critical mineral resources or otherwise specially treat producers of such resources." Is that just kind of a footnote or do you regard that as a serious deficiency in existing trade laws?

Mr. ECKES. No; I don't regard it as a serious deficiency, Senator, but let me expand on that a moment. It's true that there is no special legislation to deal with the problems of a single industry such as minerals and metals. And if we were to write that I'm sure other industries might seek a similar privileged status, and it might also be incompatible with our international trade observations under the General Agreement on Tariffs and Trade.

However, I suspect that there are ways in which existing law could be modified if the Commission—if the committee were so interested. Let me suggest, as I did in my preliminary remarks, that with respect to subsidized and concessionary financing it's my impression that under current law the World Bank, the Export-Import Bank, loans and others are not countervailable. Possible this is something that should be changed. I offer it only as a suggestion not because that I necessarily favor it.

In previous testimony on the House side and I think to the Senate Finance Committee, I've suggested that some aspects of our current laws dealing with unfair trade practices might possibly be remedied. For example, we have an extensive judicial review procedure, which I think tends to raise the cost of domestic petitioners and foreign respondents seeking relief under U.S. law.

It's not unusual for it to cost a quarter of a million dollars. I'm told that some of the carbon steel makers last year may have spent in excess of $10 million seeking relief under these statutes. And the appeals process tends to add cost. And yet it's only rarely that the Commission is overturned in its decisions.

So that's something that I've suggested to the Senate Finance and House Ways and Means Committee as a possible change which would make it easier for affected industries to gain relief.

The CHAIRMAN. In December 1982, the President decided to upgrade the stockpiles of manganese and chromium ores. Would you infer from that that the findings of the Commerce Department's investigation pursuant to section 232 of the Trade Expansion Act regarding the ferroalloys industry's request for import relief means that there is a threat to national security as a result of such imports?

Mr. ECKES. Senator, I regret that I have no firsthand information on that section 232 investigation since we have no statutory role. When one event follows another there is often a connection but there is something called the post hoc ergo propter hoc situation, I remember from my elementary Latin. I presume in this instance there was a connection between the two but I can't state it as a fact.

The CHAIRMAN. You made reference earlier to your book, 1979 book entitled "The U.S. and the Global Struggle for Minerals" which was an excellent and is an excellent account of how minerals policy has been an ad hoc affair in this country. I might parenthetically observe that perhaps the book could be better described as how the United States has reacted since the 1930's to emergency and politically motivated minerals problems rather than following any predetermined policy of self-interest.

Mr. ECKES. I think that's a fair generalization, Senator.

The CHAIRMAN. From that historic perspective, and from your present position on ITC, do you see any improvements in the trade policy area that indicates to you that the United States is now taking a more realistic approach to U.S. self-interests?

Mr. ECKES. I regret that I don't, I may not be the best interest on this since I put that manuscript aside 5 years ago. And I'm a little hesitant to criticize the policy process of which I am not a part and sometimes scarcely understand it.

I am individually still concerned that ad hocery exists. And I think of the problems with competing Government priorities for example in the 1930's, budgetary considerations also caused us to shelve stockpiling. And as I said earlier, when we entered World War II we woke up to find that we had almost no stockpile of some very vital raw materials.

So maybe the budget balancers won the battle of the stockpile, but over the long run it was quite costly, I think, to our effort in World War II. I don't mean to suggest that the current situation is analagous, but I can understand that concern in a personal sort of way.

The CHAIRMAN. The ITC has been in the middle of the steel trade issues for several years now. And I suppose we couldn't look at the critical nature of minerals availability without looking at our domestic capacity to deal with those minerals.

There has been a lot of talk in recent years in the U.N. and among various think tank organizations throughout the United States, if not throughout the world, that the industrialized world should accept the major transfer of its steelmaking to the lesser developed countries. A great deal of the recent capacity has been in

LDC's. And most of that has been designed for export capacity, it's not been designed for internal consumption.

Could I ask a rather generalized question with respect to that discussion. Do you believe that our industry will be able to modernize to keep pace with world competition, especially in the face of expanding exports from the LDC's? And is that, if the answer to that is that there is some doubt, then can we safely afford the transfer of basic industry away from our shores to those in foreign countries?

Mr. ECKES. You raise a very good question. I am concerned about it. Let me again respond in my personal capacity since I don't have the liberty to speak for my colleagues on the Commission.

As I recall as a historian that no great nation has really functioned, survived without an iron and steel industry. And I think it's obvious to all of us that the United States needs some capacity. Just how much capacity we need is obviously an arguable point. There are some segments of the iron and steel industry that seem to be doing reasonably well in the minimills with their electric furnaces, they are reliant on scrap and the like, seem to be doing reasonably well. But our integrated producers have been having a lot of trouble because of the high wage costs approaching $25 an hour, because of inadequate investment, and as you point out, because of growing capacity in some of the less developed countries.

We found that in Korea the wage costs are just a fraction of what they are in the United States. And yet the Koreans have the most modern steel facilities in the world designed, if I recall, by the Japanese.

It seems to me then that if this Nation is to maintain a viable steel industry over the long run we may well find it necessary to provide protection over an extended period of time. But I don't mean to say that I'm advocating that course. I recall that even Adam Smith, who wrote "The Wealth of Nations" and is renowned as the great free trader, made a comment that defense is more important opulence.

The downside of it of course is that if you protect one industry such as steel others are going to seek it. High steel costs could well handicap users such as those in the automobile industry encouraging them to shift their sourcing offshore. It's a major problem.

It seems to me our problem as a nation is how to help industries such as steel, our basic industries, our mature industries, adjust effectively to import competition. As I look at the record, instances where we have provided import competition relief in the past through tariffs and quotas, very seldom has this really brought effective adjustment, lowering costs and making them competitive in world markets. There are a few instances but not many.

It seems to me that your colleague Senator Heinz from Pennsylvania has offered an interesting suggestion in this area with his economic revitalization plan which would strengthen the adjustment mechanism for the escape clause so that when tariff or quota relief were provided there would be a stronger mechanism for insuring that adjustment is carried out. He has a tripartite plan that would bring together government, industry, and labor. I find that one of the more imaginative proposals that's been circulated. But I think we're going to have to do more in that area or face the dilemma that you note being reliant on other countries for basic steel.

The CHAIRMAN. In terms of global economic efficiency I think you could restate it as a relatively acceptable premise that we ought to permit those areas of greatest economic efficiency to produce at lowest possible cost. And we'll benefit from that intercourse in international trade. But unfortunately, that assumes that all trade is free, that all conditions are equal, and that national security isn't affected.

It's I guess those caveats, those conditions and those reservations that cause me some concern about too casual acceptance of the general premise that economic efficiency is the thing we ought to be after at all costs.

I'm reminded that our steel industry has had to devote a great deal of its capital investment in recent years to pollution abatement. I'm not opposed to abating the pollution that has emanated from old industrial operations in this country. But if they are then up against the competition from an LDC in which they have no such constraints on their operation we become very poor competitors.

I looked recently at a U.S. steel company that moved offshore to Brazil with Spanish financing. Those conditions were not equal on all sides. The finance arrangements made from Spain were concessionary. The operating conditions in Brazil were far less stringent than they are in this country. And if we don't recognize that we'll not have a domestic industry.

Mr. ECKES. That's a very important problem that you've identified: How do we deal with unfair competition in third markets? And our current laws really don't allow us to deal with it adequately, though perhaps section 301, which the U.S. Trade Representative administers does allow for consultations, perhaps remedies through the diplomatic process.

The CHAIRMAN. Well, I wouldn't even characterize it necessarily as unfair competition, I'd call it unequal competition. Somehow we have to balance that scale if we're going to maintain the jobs in this country.

I remember reading very recently Manchester's recent book, a biography of Winston Churchill, entitled "The Last Lion" in which he went at some length in delineating Britain's economic difficulties in the 1920's and early 1930's on the basis of loss of jobs to foreign competitors. Maybe there's a parallel that we need to apply in our own current conditions.

Senator Hecht?

Senator HECHT. Thank you, Mr. CHAIRMAN. I'd like to carry one with this last discussion and ask you this question: Since you say we do not have adequate provision in the law right now, how can we deal with unequal competition with Third World countries? What would you propose?

Mr. ECKES. I may have been misunderstood, Senator, or misspoken. I was thinking of problems related to unfair competition among our trading partners. With respect to goods that are traded unfairly and enter the U.S. market, it seems to me that we do have laws and the laws have been shown to work.

As we discussed earlier, there are no special provisions in those laws to deal with the problems of the metals and mining industry. But I think to provide that would probably open a can of worms in which every industry would seek special concessions and special protection.

But over the course of the recession we have found that in particular foreign nations were resorting to subsidies and dumping in order to move their surplus production. And I think U.S. laws have been rather firmly applied in most instances. And I think with significant results.

Senator HECHT. Specifically what could you recommend to help the mining industry?

Mr. ECKES. Well, as I said earlier, I think anything we can do to cut the costs of the proceedings might enable smaller industries or small firms to seek relief under our current laws. That is one of the basic problems—the enormous cost of the proceedings.

At the present time I don't have any other specific suggestions but I'd be happy to brainstorm and perhaps I could provide something in a posthearing submission.

Senator HECHT. I'd appreciate it. Thank you very much.

Mr. ECKES. Thank you, Senator.

The CHAIRMAN. Thank you very much for your testimony. You have been a thoughtful scholar. You are indeed a thoughtful witness today. I'm glad you are where you are today having some impact on U.S. policy. We appreciate your testimony.

Mr. ECKES. Thank you very much.

The CHAIRMAN. Our next witness, Mr. Christian R. Holmes, Director, Trade and Development Program, International Development Cooperation Agency.

Mr. Holmes, again, as with the previous witnesses. We have your entire prepared statement. You are invited to present it or summarize it. Your entire statement will appear in the record in full.

## STATEMENT OF CHRISTIAN R. HOLMES, DIRECTOR, TRADE AND DEVELOPMENT PROGRAM, INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

Mr. HOLMES. Thank you, Mr. CHAIRMAN. I will offer a very brief summary of my statement.

The CHAIRMAN. Thank you.

Mr. HOLMES. Mr. Chairman and members of the committee, I very much appreciate this opportunity to testify before you today. I am here specifically to discuss the International Development Cooperation Agency policies and programs for assisting foreign mineral development.

I serve as the Director of the International Development and Cooperation Agency's trade and development program. The trade and development program is one of three component agencies within IDCA, which is the acronym by which it is known. AID, the Agency for International Development, and OPIC, the Overseas Private Investment Corporation, also serve as part of IDCA.

Peter McPherson, who is the Acting Director of IDCA, has asked me to testify in his behalf on how these three programs relate to foreign mineral development. In my testimony today I will concentrate specifically on those three agencies.

Let me first turn to the Overseas Private Investment Corporation.

OPIC programs in political risk insurance and financing are the primary instruments that enable the private sector, that is U.S. investors, to gain access to diverse sources of strategic minerals. OPIC's minerals initiative, instituted in 1977 in response to the decline of U.S. direct foreign mining investment in developing countries, is regarded as one of the primary bilateral tools to revive investor interest in developing country mining projects. In fact, approximately 40 percent of the mining projects that OPIC insures or finances has involved strategic and critical minerals.

OPIC is committed to helping U.S. businesses in the strategic minerals sector overcome some of the major obstacles that hinder investment overseas. OPIC has provided assistance to numerous U.S. investors involved in strategic minerals projects in developing countries through its specialized insurance and finance programs. To date, OPIC has written 119 contracts in 25 countries, amounting to $3.7 billion in coverage. We have submitted additional information on OPIC's programs for the record.

Let me turn to the Agency for International Development.

AID is undertaking a modest, but important effort to encourage developing countries to keep up their production of certain minerals.

AID pays great attention to the policies of foreign countries because over the long term it is the foreign country's own policies which are the dominant influence in its economic growth and in its ability to attract foreign capital. Government policies can deter foreign investment if investors fear nationalization, restriction of return on profits to the United States, the limiting of foreign exchange when it is needed for parts, and equipment, and so forth.

Such policies of Third World countries have decreased mining investments. Although AID does not generally deal with mining investment issues specifically, it does work hard to encourage countries to develop market economies open to the outside world.

Perhaps one of the most important things AID can do in terms of opening up access to strategic minerals is our ongoing bilateral development programs in those countries on which we are extremely dependant for overseas supplies.

Let me now turn to the trade and development program, the entity which I direct.

The trade and development program is a relatively new organization. It was started in 1979 and really took off at the outset of the Reagan administration.

The mandate for the program, which is funded through the Foreign Assistance Act and which is budgeted through this fiscal year at about $10.5 million, is to open up opportunities for trade with developing countries, to help countries develop, and to help the United States have access to natural resources of interest to us.

Our activities in the strategics area have been primarily confined to four strategic resources on which we are between 88 percent and 99 percent dependent upon foreign resources. Those are manganese, chromium, cobalt, and platinum.

The countries that we concentrated on have been Morocco, Peru, Mexico, and the Philippines. We're also looking at possibilities in several other countries.

Our strategy has basically been evolving over a relatively long period of time. We work very carefully with the Hill and with a number of organizations, both in the executive branch and the private sector.

Rather than taking up your time right now, if you wish I'd be happy to elaborate upon our strategy during dialog. That concludes my statement.

[The prepared statement of Mr. Holmes follows:]

## STATEMENT OF CHRISTIAN R. HOLMES, DIRECTOR, TRADE AND DEVELOPMENT PROGRAM, INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

Mr. Chairman and Members of the Committee, I am honored to be here today to discuss "International Development Cooperation Agency Policies and Programs for Assisting Foreign Mineral Development." I am the Director of the Trade and Development Program, a part of the International Development Cooperation Agency (I.D.C.A.). In addition to the Trade and Development Program (T.D.P.), I.D.C.A. also includes the Agency for International Development (A.I.D.) and the Overseas Private Investment Corporation (O.P.I.C.). Peter McPherson, Acting Director of I.D.C.A., has asked me to testify in his behalf on how these three I.D.C.A. programs relate to foreign mineral development.

In his April 1982 National Materials and Minerals Program Plan and Report to Congress, President Reagan emphasized his concern over the increasing dependence of the United States and the free world upon foreign sources for strategic and critical minerals. In this plan, the President outlined the activities to be undertaken by the Administration to reduce America's materials vulnerability. I.D.C.A. has been assigned an important role in the process of securing access to supplies of strategic and critical minerals through its Trade and Development Program.

The broad objectives of the U.S. bilateral assistance programs are to promote stability in friendly countries by assisting them to overcome their financial difficulties, and to help developing countries create the conditions for self-sustaining growth of a kind that permits the poor to participate and to benefit from the growth process.

The promotion of political and economic security is imperative if the U.S. private sector is to be encouraged to invest in natural resources development projects and work with the indigenous private sector in developing countries. The role of the private sector is predominant in and the major thrust of the Administration's economic development strategy.

In consideration of the goals of the Foreign Assistance Act and the objectives of U.S. bilateral assistance programs, we believe that natural resources development is an effective development assistance mechanism. This Administration believes that foreign assistance can be utilized to meet our economic, national security, and political goals vis-a-vis strategic and critical materials, and also contribute to economic development.

Although the market system for minerals has generally worked well in the past by generating a steady and reliable flow of supplies at reasonable prices, there is a significant potential for political instability in central and southern Africa and other parts of the world which are important suppliers of raw and processed materials to the United States and its allies. Access to supplies of critical materials, therefore, has always been a concern of U.S. policy and can be a factor in making decisions about economic assistance.

Let me first explain how natural resources development serves as a development assistance mechanism, and then I'll discuss the T.D.P, O.P.I.C., and A.I.D. programs directed at either securing access to, or developing new sources of, strategic and critical minerals.

NATURAL RESOURCES DEVELOPMENT

Natural resources are a principal economic asset in most developing countries and are often the major source of an LDC's economic growth. In fact, mining is far more significant as a basis for development planning in these countries (in which there are few other bases for industrialization) than in industrialized nations.

However, most developing countries remain aware that they cannot industrialize their economies on a large scale without the cooperation of developed countries and their associated private sectors (especially large mining companies and multi-national corporations) which have access to world markets and marketing systems, possess and control mining technologies, and can call upon the managerial and financial resources needed for development. In addition, the critical debt situation of most developing countries requires that the financing of natural resources projects comes from developed countries or the private sector.

There are many broad development objectives to be achieved through a sound natural resources development program. Some of the objectives, as well as benefits to the host country, are to:

- ensure optimal use of available mineral resources.
- earn or save foreign exchange.
- receive revenue through taxes and royalties.

- create employment (direct or indirect to the mining project), often in remote or depressed areas.
- promote backward and forward linkages (service and supply industries and processing of raw materials) in order to maximize value added within the country, to the extent that it is economically sound.
- stimulate regional development, often in remote areas.
- improve the professional and technical skills of nationals, much of which can be transferred to other industries that require similar skills such as manufacturing or construction, and helps to increase the general availability of skilled labor.
- serve as the nucleus for economic development (as the scope and size of minerals projects are independent of the size of local markets and the local economy).
- increase literacy and provide basic education.

However, the impact of natural resources development is most pronounced in its effect on national infrastructure development. The role of infrastructure development is more central in mining than in other industries because the mining activity is often conducted in relatively isolated areas. The development of mining areas, therefore, requires heavy investment in infrastructure facilities. The large infrastructure investments will be directed towards water and electric power supply systems, transportation facilities (railroads, highways, port facilities, and loading and unloading facilities), social and municipal facilities (housing, hospitals or other medical centers, and schools), and communication systems.

TRADE AND DEVELOPMENT PROGRAM

As noted earlier, the President's National Materials and Minerals Program Plan and Report to Congress directed I.D.C.A's T.D.P., which I head, to give new emphasis to strategic minerals and metal-related development activities, in accordance with its legislative mandate. This mandate, embodied in the 1974 amendments to the Foreign Assistance Act and the International Security and Development Cooperation Act of 1981, authorized the U.S. to facilitate "open and fair access to natural resources of interest to the United States." T.D.P. was established as a separate agency in I.D.C.A. in 1980. One of T.D.P.'s three major objectives is to broaden opportunities for the U.S. private sector to participate in the development and diversification of foreign sources of supply of strategic and critical materials.

T.D.P., aware of serious shortages of critical materials vital to U.S. industries and national defense, began to develop an assistance strategy designed to satisfy both U.S. and developing country needs early in the Reagan Administration. After consultations with representatives of the public and private sectors and the Congress, T.D.P. selected cobalt, chromium, manganese, and the platinum group metals as its first phase development targets.

T.D.P.'s efforts in this area have concentrated primarily with nations that are political allies, such as Mexico, Peru, Morocco, and the Philippines. Such considerations are important for assuring continued access to these much-needed minerals. In addition, T.D.P.-sponsored projects offer the potential for U.S. business to provide tens of millions of dollars in technical services and equipment during the project development cycle. T.D.P.'s current and future critical materials projects are discussed in detail in Attachment A.

## OVERSEAS PRIVATE INVESTMENT CORPORATION

O.P.I.C. programs in political risk insurance and financing are the primary instruments that enable the private sector (U.S. investors) to gain access to diverse sources of strategic minerals. O.P.I.C.'s minerals initiative, instituted in 1977 in response to the decline of U.S. direct foreign mining investment in developing countries, is regarded as one of the primary bilateral tools to revive investor interest in developing country mining projects. In fact, approximately 40 percent of the mining projects that O.P.I.C. insures or finances has involved strategic and critical minerals.

O.P.I.C. is actively looking for more and better ways to encourage U.S. investors to enter the international marketplace. The exploration for sources of strategic minerals is important to the interests of both the U.S. and friendly developing countries. O.P.I.C. recognizes the potential contributions that can be made by the private sector (both national and foreign) to the development process, and is committed to helping U.S. businesses in the strategic minerals sector overcome some of the major obstacles that hinder investment overseas. O.P.I.C. has provided assistance to numerous U.S. investors involved in strategic minerals projects in developing countries through its specialized insurance and finance programs. To date, O.P.I.C. has written 119 contracts in 25 countries, amounting to $3.7 billion in coverage. The scope and funding of these programs are detailed in Attachment B.

## AGENCY FOR INTERNATIONAL DEVELOPMENT

A.I.D. is undertaking a modest, but important effort to encourage developing countries to keep up their production of certain minerals. (Several of these projects are listed in Attachment C.) Of course, the Agency is conscious of both the U.S. import needs and the concerns of U.S. domestic producers in our efforts. Let me review what A.I.D. is doing to help production in developing countries.

A.I.D. pays great attention to the policies of foreign countries because over the long term it is the foreign country's own policies which are the dominant influence in its economic growth based on its ability to attract foreign capital. Government policies can deter foreign investment if investors fear nationalization, restriction of return on profits to the United States, the limiting of foreign exchange when it is needed for parts, equipment, and so forth. Such policies of Third World countries have decreased mining investments. Although A.I.D. does not generally deal with mining investment issues specifically, it does work hard to encourage countries to develop market economies, open to the outside world.

Two of the major financing tools that A.I.D. uses to promote broadly based, sustained economic growth in developing nations are Development Assistance and the Economic Support Fund. Development Assistance programs reflect a Congressional mandate to pursue the broadening of economic opportunity through a focus on the sectors that most directly promote equitable growth. The Economic Support Fund was established to promote economic and political stability in regions where the U.S. has special security interests and has determined that economic assistance can be useful in helping to secure peace or to avert major economic or political crises.

## CONCLUSION

I.D.C.A. will continue to direct many of its resources towards those countries that need assistance that have the critical materials most needed by the United States.

In conclusion, I would like to summarize the goals of our policies and programs in the critical materials sector. These goals are to:

- encourage the involvement of the U.S. private sector in the promotion of political and economic security in developing countries.
- provide opportunities to diversify current and identify new foreign sources of minerals to lessen U.S. vulnerability.
- be responsive to the needs of mining investors.
- work with host countries and the private sector to develop guidelines for U.S. investment and ownership in natural resource development projects.

Thank for this opportunity to outline I.D.C.A. programs in this area. I will be happy to respond to any questions that the Committee may have.

## ATTACHMENT A

T.D.P. is involved in many mineral projects that are designed to reduce our supply vulnerability by diversifying existing or identifying new sources of strategic and critical minerals. These projects are summarized below.

Cobalt in Morocco: In early 1982, T.D.P. followed up a 1981 seminar on minerals in Morocco by fielding a team of experts to examine the cobalt arsenide deposits of Bou Azzer in the Anti-Atlas Mountains of that country and assess the economic and legal factors affecting future joint mineral ventures involving U.S. private sector mining firms. The team found the Moroccan Government prepared to extend depletion allowances, duty-free import of mining machinery, and a 2% incentive reduction in interest on capital borrowed in Morocco by substantial joint mining ventures.

Bou Azzer is a unique site in that cobalt is mined there mainly for the cobalt values (minor nickel and other elements are recovered) and not as a by-product of copper or nickel as is done elsewhere in the world. Although cobalt reserves at the known deposits at Bou Azzer are inadequate to attract U.S. mining firms now, there are excellent potential exploration targets when cobalt prices improve.

Cobalt in Peru: In 1982, the cobalt potential of the Marcona iron mines of Peru was investigated by T.D.P. It was found that in the process of mining 7.2 million tons of crude iron ore annually (from a reserve of more than 350 million tons), and beneficiating it to provide 5 1/2 million tons of high grade iron concentrates (sold at a profit in the world market), pyrite carrying more than 2000 tons of cobalt metal has been mined, separated, and stacked yearly for nearly thirty years. Since the U.S. consumes between 6000 and 9000 tons of cobalt each year, Marcona could supply a substantial portion of our requirement, even at the 7.2 million ton production rate, which could be doubled if the iron ore market improves. It should be noted, however, that among the factors yet to be determined is whether the Peruvian cobalt is of a grade that will meet U.S. defense applications.

Hierro Peru, a Peruvian Government enterprise, has expressed its preference for U.S. equipment and technology over the French and Finnish equipment which it had been offered. Therefore, T.D.P. has set aside $400,000 for the foreign exchange costs of a bankable feasibility study of modifying the concentration plant at San Nicolas, Peru to recover a cobalt concentrate compatible with the feed requirements of the only operational cobalt refinery in the U.S. at Port Nickel, Louisiana. A Peruvian Presidential Decree, permitting signature of the T.D.P. grant agreement, is anticipated by August 1983.

If the feasibility study is positive, and financing made available, exports of more than $50 million worth of U.S. goods and services are expected, and the U.S. cobalt supply base will be broadened effectively.

Chromium in the Philippines: In early 1983, T.D.P. sent a team of scientists to evaluate the potential for increasing U.S. chromite off-take from the Philippines. As much as 100 million tons of indicated and inferred reserves of chromite ore await exploration and development. Joint ventures, with foreign ownership up to 40%, are welcomed by the Philippines. The T.D.P. team's report, indicating several alternative chromite involvements for U.S. firms, is now being distributed to U.S. mining companies.

Manganese in Mexico: At present no commercial deposits of manganese, vital to the steel industry and important for dry cell batteries and in the chemical industry, are known in the U.S. However, a Mexican firm, Compania Minera Autlan, produces beneficiated manganese oxide nodules, ferro manganese, and silico manganese from a very large manganese carbonate deposit at Molango, Mexico . Minera Autlan geologists have outlined more than 28 million tons of measured economic reserves of carbonate ore, analyzing 25.7% manganese and 900,000 tons of battery-grade oxide ore from 1.5 billion tons of indicated and inferred economic reserves running about 25% manganese.

A number of interesting possibilities for joint ventures are indicated in the report which will be distributed to U.S. mining firms this month. One U.S. firm is already preparing a previously-conceived joint venture project which they plan to submit to Autlan and to T.D.P. at the end of August 1983.

Other Minerals in Morocco: T.D.P.'s investigatory team also noted areas favorable for the occurence of additional silver and multi-metal ores. Large and extensive veins of barite, a material used in oil well drilling muds, were of particular interest. Based on T.D.P.'s barite observations, one U.S. mining company has already established a Moroccan subsidiary to buy barite from Moroccan producers now and to explore the veins located by T.D.P. at a later date.

To inform the minerals industry of its activities, T.D.P. sends news items on projects to industry and trade journals. Mining companies that are interested in these projects are invited to attend briefings on the projects. The mining industry has been very responsive to this approach.

T.D.P. also has a wide range of future programs planned to reduce our minerals supply vulnerability. These include:

Manganese: T.D.P. will make appropriate responses to joint venture requests in Mexico following circulation of its report on Autlan's Molango deposit. T.D.P. also plans to assist the U.S. private sector in evaluating and participating in large new Brazilian manganese finds at Carajas and elsewhere.

Chromium: After U.S. mining groups have had time to study T.D.P.'s report on Philippine chromites, T.D.P. will give serious consideration to resulting joint venture proposals. T.D.P. has also been invited to send a team to assess Turkish chromites. Turkey is a traditionally public sector oriented supplier of chrome ores, but is now prepared to offer joint ventures to U.S. miners. In addition, Turkey has nearly 24,000 square kilometers of unexplored or partly explored ultra-mafics with a high potential for additional chromite discoveries. T.D.P. is also studying reports of chromite deposits in the Sudan and southwestern Greenland to determine whether these deposits merit further investigation.

Platinum Group Metals: Colombia has been recovering platinum from placer deposits in river beds for several hundred years. T.D.P. plans to attempt to locate other placers, and perhaps the origin of the platinum, utilizing N.A.S.A. satellite imagery and scientists from N.A.S.A., American University, the U.S. Bureau of Mines and the U.S. Geological Survey. Should their studies of satellite imagery, known geology, and tectonics indicate favorable target areas, a team will evaluate their potential in Colombia.

Cobalt: No additional cobalt studies are planned since the Peruvian project is about to get underway. Further work with this element will depend on results at Marcona and/or substantial cobalt market changes.

## ATTACHMENT B

Of the two major programs that O.P.I.C. operates in support of U.S. private investors in the strategic minerals sector, the largest program by far is insurance. O.P.I.C. also offers a separate insurance program for the oil and gas sector.

The mining program, as well as the oil and gas program, offers U.S. companies highly flexible and innovative coverage for their investments in mineral exploration and development. O.P.I.C. will cover 50-90% of an eligible investor's initial investment plus an equal amount of retained earnings, generally in an amount not to exceed $150 million. The coverage protects against risks of inconvertibility, expropriation, and political instability (war/revolution/insurrection/civil strife). In addition to the standard war coverage, insurance may be offered to cover consequential losses due to the closing of operations because of events of war/revolution/insurrection or civil strife. The contract term for this coverage is 20 years.

In addition to the mining programs, O.P.I.C. provides ancillary financial services to mining contractors, specialized equipment lessors, and institutional lenders in mineral projects. Under O.P.I.C.'s contractors' coverage, an investor can insure the risks associated with the performance of contracts between U.S. suppliers of goods and services and foreign governments or foreign companies. Letters of credit posted as bid, performance and advance payment guaranties may be obtained against arbitrary drawings. Insurance for risks associated with performance of the underlying contract can be insured against losses resulting from currency inconvertibility, expropriation of tangible property or bank accounts, war/revolution/insurrection/civil strife, or failure to adhere to contractually specified disputes resolution mechanisms.

O.P.I.C.'s leasing program can cover cross-border equipment lease transactions against losses resulting from currency inconvertibility, expropriation, or war/revolution/insurrection/civil strife. Coverage is also available for equity investments in and loans to those equipment lessors who plan to conduct their operations through the establishment of offshore leasing companies.

The protection afforded by O.P.I.C.'s insurance programs encourages American companies engaged in strategic minerals exploration and production to enter international markets by reducing some of the perceived political risks associated with such projects. Exploration overseas by U.S. companies not only facilitates host country development, but also directly benefits the U.S. balance of payments by encouraging the employment of U.S. citizens by stimulating the purchase of U.S. goods and services. Because O.P.I.C. recognizes that even more indirect benefit can accrue to the U.S. through the activities of U.S. banks in the developing world market, O.P.I.C. offers yet another program to address the needs of institutional lenders. Debt coverage is available to insure the lender against a default on a scheduled payment stream of principal and interest because of currency inconvertibility, expropriation, or war/revolution/insurrection/civil strife.

As a complement to its insurance programs, O.P.I.C.'s finance program offers loan guaranties which provide medium term and long term funding support for petroleum and mining ventures involving substantial equity and management participation by U.S. businesses. O.P.I.C. participation often is in the form of project financing, which is based on the economic, technical, marketing and financial soundness of the project itself. O.P.I.C. aids the financing of large scale mining projects through the issuance of O.P.I.C. all-risk guaranties to U.S. financial institutions which furnish funds for an acceptable venture on terms approved by O.P.I.C. The O.P.I.C. guaranty, ranging up to $50 million, is an irrevocable commitment to the lender that principal and interest will be paid promptly by O.P.I.C. if for any reason, commercial or political, the borrower fails to pay according to the loan agreement. The finance program has committed $343.9 million to eight investors in petroleum and strategic minerals projects in eight countries.

Because the O.P.I.C. finance program is designed to complement and supplement the lending and investment facilities of commercial banks, local, regional, and international development banks and entities like the Export-Import Bank of the United States, O.P.I.C. will advise and assist U.S. sponsors in securing financing from these institutions.

## ATTACHMENT C

The minerals projects financed by A.I.D. in recent years include the:

- investigation of the potential availability of cobalt supplies in Morocco (1982).
- identification of potentially exploitable minerals and planning of a national minerals exploration program in Jordan (1981).
- potential minerals projects for development in Kenya (1980).
- analysis of the mining sectors of eight southern African countries in terms of economic significance, future constraints and prospects for mineral development, social and employment impacts, and government policies towards foreign investment (1978).
- performance of a feasibility analysis for the utilization of gypsum in Pakistan (1978).
- review of the phosphate rock industry in North and East Africa (1978).
- expectations for growth of the minerals sector in Namibia (1977).
- overview of the mining sector in Zimbabwe (1977).

The **Chairman**. Thank you very much. I have just two or three questions. And without attempting to appear parochial, and there's a danger if you use a domestic example that happens to be in your own State that that's your only concern, but let me take an example. In your attachment A, the first example is cobalt in Morocco. The second example is cobalt in Peru. We look at various incentives and indirect subsidies or assistance to the production of cobalt in those two countries.

Have you looked to see whether or not the cobalt industry in the United States would succeed with similar subsidy?

Mr. **Holmes**. The extent of our subsidy is only for feasibility study financing. On the cobalt, Morocco project, we financed a team of three professionals who went out to Morocco to determine the feasible, technical, and economic feasibility of extracting that cobalt. We have been extremely sensitive to the problems of trying to develop cobalt when the spinoff quite often is copper.

The Bou Azzer resources in Morocco are high concentration cobalt. But in terms of your specific reference to Idaho that if we are getting into project finance, then I think that such an analysis might be done. But seeing as how we're talking about an approximate $40,000 feasibility study, we have not made a comparative analysis.

I might also add, Mr. Chairman, that our prime mandate in addition to trying develop access to strategic resources is really export promotion; we're looking for opportunities to move U.S. equipment services into these countries.

The **Chairman**. Well, I understand that that's your primary objective. I'm a little concerned about whether or not we're concerned about moving U.S. equipment into U.S. mines. I'm a lot more interested generally in providing additional jobs in Idaho than I am in Morocco or in Peru.

Mr. **Holmes**. If I may comment on that again, sir?

The **Chairman**. Yes, sir.

Mr. **Holmes**. The Blackbird Mine I am told cost about $25 per pound for cobalt to be competitive. It's my understanding that the spot market price now is between $4 and $6 a pound. That was one of the understandings that we had before we moved out on the cobalt question. If there was a possibility of international competitiveness I think we would have held off on that.

The **Chairman**. That's the reason I asked the question.

Mr. **Holmes**. Right.

The **Chairman**. If you'd made any analysis of what it would take to make the U.S. mining industry successful there and you indicated you had not. Now you indicate that you have.

Mr. **Holmes**. The kind of, the kind of economic analysis I think that you would want us to undertake would go way beyond taking a look at the spot market.

The **Chairman**. But you made a judgment that it was worthwhile to go to Morocco and to Peru instead of looking at Idaho. You made the judgment based upon something. And by your own words, an inadequate something.

Mr. **Holmes**. The judgment that we made to go to Morocco was motivated on the export question. It was motivated on looking at alternative sources for strategics.

The **Chairman**. I understand that. But I would think the most secure source of strategic minerals are within our own borders.

Mr. **Holmes**. I completely agree with you, sir.

The **Chairman**. And I don't mean to belabor that except to point up the fact that we compartmentalize our thinking and we don't really look at it in terms of an overall security strategy for the United States, let alone an overall strategy to stimulate or protect our own industry. We divide up our responsibilities and somebody like you can say with complete justification, well, that's not really my, that's not really my responsibility. Somebody else has to worry about that. I only look at what we can do for Morocco.

Which seems to me to point out a problem that we need to address. And I'm not at all opposed to finding or assisting those other areas of the world, but there ought to be some comparisons made about which is the most secure source and what's necessary to give that most secure source the opportunities it needs. And also, what does that do to our own economy within our own country.

I think the greatest possibilities, you don't have to have an Ex-Im Bank financing scheme to put U.S. equipment into a U.S. mine. You do if you're talking about U.S. equipment into a foreign mine. So you end up in a double subsidy effort. Not that either is wrong by itself. But I think they are both considerations.

Mr. Holmes, you state in your testimony that the legislative mandate of the International Development Cooperation Agency is to facilitate open and fair access to the natural resources of interest to the United States. Should a foreign government decide to expropriate a U.S. mineral investment, for whatever reason, what recourse does a U.S company have to seek adequate compensation?

Mr. **Holmes**. I think that, if I could answer that in three segments, and perhaps look at first of all what can be done to hopefully prevent the actual expropriations from occurring at the start.

We have really three steps that can be taken. One is, if the company is receiving OPIC insurance from the Overseas Private Investment Corporation, when it looks like there is a chance of expropriation occurring, then teams from the Overseas Priviate Investment Corporation will go to that country and try to negotiate them away from that stance.

The other preventative step is the fact that the Reagan administration is now starting to negotiate bilateral investment treaties. So many of these countries do not have binding arbitration. And this is an effort to get that in place.

The third one if what I might call the fear of having Hickenlooper amendment actually applied in some of these countries. While Hickenlooper has not been applied often, countries know about it and don't want it applied because it means a cutoff of economic assistance.

In terms of specific recourse for a company, if a company is not a recipient of OPIC insurance or recipient of a private carrier, then it has the recourse to the courts. It's helped considerably if there is a bilateral investment treaty. And then finally, of course, there is the State Department that is willing to go to bat for U.S. firms in the negotiations.

The **Chairman**. Mr. Holmes, you state in your testimony that the trade development program began to develop and assistance strategy to satisfy both U.S. and developing country needs in the investment area.

Can you explain in some greater detail what that strategy consists of?

Mr. HOLMES. After your first question I'll explain it very carefully.

When we first went into this question of strategics we were looking at it from our window, as you pointed out. And we chose to focus on four strategics that appeared to be those that we were extremely dependent upon foreign sources. So we negotiated and discussed with State's Office of Strategic Minerals, the Federal Emergency Management Administration, with the House Armed Services Subcommittee on Critical Resources and Sea Power, a number of organizations.

We particularly looked at our defense needs, what do we need from a defense perspective? So we arrived at manganese, chromium, cobalt, and platinum.

I'm sure you've heard ad infinitum the example of the F-100 engine and its dependence upon chromium and platinum.

We then went from that point to take a look at what countries had these resources that are within our hemisphere or are allies to us. So that led us to Peru for cobalt, Mexico for manganese, Morocco for cobalt, Philippines for chromium.

One of the considerations, so that I do try to demonstrate that we have tried to be as sensitive as we could be, although I understand your point about not being sufficiently sensitive, when we took a look at cobalt we were concerned about the copper spinoff problem. That's what in part led us to Bou Azzer because the concentration is so high there that you don't have to produce copper and nickel at the same time.

The same thing in the Peru situation. We really looked at the domestic impact. In Peru we took a look at a facility down there that was producing cobalt as a byproduct of iron pyrites. And the importance of that facility is that if you can take the cobalt there and concentrate it and ship it to the United States it will compatible with our refinery at Port Nickel, La. And one of the decisions we factored into moving ahead on this was the fact that Port Nickel's employment would hopefully be increased down the line if, in fact, the feasibility study led to actual development.

That's the essential components of our developing strategy.

The CHAIRMAN. Well, again, I would, I would hope that there is a cross-reference to domestic industry at some level. And in your summary I didn't hear that.

Mr. HOLMES. The best cross-reference to domestic industry and the area where there is the problem is the cobalt situation. Manganese and chromium and platinum we can't appear to have that in the sense that you're referring to.

I think the motivator is so much, Mr. Chairman, on the cobalt side is our desire to come up with stable sources for cobalt. But I buy you point totally that Idaho is a very stable place.

The CHAIRMAN. I was hoping you hadn't put us down as an unstable government. I was about to rush out and make a phone call to the Governor and find out what happened out there recently.

Mr. HOLMES. That's right.

The CHAIRMAN. One of the problems experienced by U.S. mining companies in the 1970's was the so-called obsolescent bargain. And developing countries tried to change the ground rules after investment in a project had taken place. Was the potential threat of agreement revision a major factor in multinational corporations steering clear of the LDC countries?

Mr. HOLMES. I don't really know to what extent that is. I know that the Overseas Private Investment Corporation tries to factor that into its political risk insurance. And I know that Hickenlooper amendment as part of the Foreign Assistance Act, also factors that in. So Hickenlooper goes into effect if, in fact, they abrogate a deal. But I'm sorry I can't give you a more definitive answer but I'll do my best to submit it for the record.

The CHAIRMAN. Would you——

Mr. HOLMES. Yes, sir.

The CHAIRMAN [continuing]. Try to find that out and submit it for the record, please.

Senator Hecht?

Senator HECHT. No, thank you. I want to hear the next witness.

The CHAIRMAN. All right.

Senator HECHT. I think he's got a little stake in Nevada.

The CHAIRMAN. Thank you very much.

Mr. HOLMES. Thank you.

The CHAIRMAN. And I appreciate your testimony here today.

Mr. David Ridinger, vice president, governmental relations, Newmont Mining Corp.

Again, your entire statement will be made a part of the record. You are invited to summarize or extemporize if you would, or give the statement as you would prefer.

## STATEMENT OF DAVID C. RIDINGER, VICE PRESIDENT, GOVERNMENT RELATIONS, NEWMONT MINING CORP.

Mr. RIDINGER. Thank you, Mr. Chairman, Senator Hecht. Being the last on the list I guess it's an occupational hazard that most of my thunder has been stolen, but I do have a few comments.

I'm here today——

The CHAIRMAN. The cleanup hitter is usually a fellow who's relied upon to bring the rest of them around to home.

Mr. RIDINGER. I think I'll try to be brief.

At any rate, I'm here today on behalf of Newmont and its various subsidiaries, including the Arizona subsidiary, the Magma Copper Co., Pinto Valley Copper Corp., and, of course, Carlin Gold Mining in Nevada.

By way of introduction, our company is a leading energy and natural resources company engaged in exploration, operation, management of domestic and foreign mining and petroleum properties.

I don't think it's necessary to emphasize today that the—to anyone in this room—that the importance of copper to this country goes far beyond its value to domestic industries. Copper is a critical element in our national defense program. It's strategic significance to military hardware and defense equipment makes it imperative that the U.S. maintain domestic reserves of readily available metal. However, recent international lending activities by our own

Government are furthering the demise of this critically valuable domestic industry.

Historically, the United States has been virtually self-sufficient in copper, having produced over 90 percent of its total consumption in the last 10 years. Despite this self-sufficiency, the domestic price, which is set by the terminal markets, reflects worldwide production, sales, and demand.

While market price may be well-balanced during normal and prosperous times, the domestic industry is at a serious competitive disadvantage during recessionary times against foreign subsidized, government-controlled facilities, such as many of those in the lesser-developed countries.

During period of depressed demand and weak prices, those subsidized mines, for internal political reasons, often ignore basic economic laws of supply and demand and continue production without regard to profit or the needs of the copper markets. In fact, production at the Cananea copper facility in Mexico is actually being expanded or being planned to expand substantially, as I will explain further, despite current expectations of ample worldwide supply and continued weak prices.

These nationalized mines can operate in such harmful manner because they know that they can secure credit from the international lending institutions, supported largely by U.S. contributions, when operating losses occur. Meanwhile, mineral production in the United States must be curtailed significantly because of the resultant depressed market conditions, with widespread shutdowns and resulting unemployment.

Our industries pay the price for such economic manipulation by subsidized foreign producers. In the case of copper, the U.S. copper industry is rapidly becoming the surge capacity for the world, with a salable and profitable product only when world consumption of copper is greatest. This imbalance, if allowed to persist over the long term, will diminish the degree of U.S. self-sufficiency in the production of copper, and ultimately will diminish the domestic availability of this critical mineral in the event of a national crisis or emergency.

U.S. copper producers are already at a disadvantage in the world marketplace due to the immense costs of compliance with pollution control regulations—costs which are virtually nonexistent in the LDC's. The competitive disadvantage with state-owned and subsidized mines is further aggravated by the lending policies of the international financial institutions, such as World Bank, IMF, Eximbank, and others which underwrite and often encourage foreign subsidized and uneconomic production of commodities in direct competition with domestic producers and workers. As long as these policies are allowed to continue, the outlook for our own copper industry and other critical domestic metals industries I can only say is grim.

At present, the U.S. copper industry is moving out of its lowest ebb since the Great Depression. The period from the last quarter of 1981 through the first months of 1983 were unquestionably the most difficult of times since the 1930's, owing to the economic recession and the resultant low demand for copper worldwide.

During this severe domestic setback, the World Bank, through its IFC—International Finance Corporation—was arranging a $450 million loan package for the expansion of a copper mine and smelting facility at Cananea, Mexico, only 30 miles south of the Arizona border—Arizona being the leading copper producing State in the United States.

In addition, our own Eximbank approved a loan for that same Cananea copper facility in the amount of—my research told me it was $75 million; I heard today it was $165 million. With this financial backing, the Cananea facility would be able to triple its annual production of copper from 50,000 to 150,000 metric tons per year.

The increased capacity at Cananea presents grave consequences to the U.S. copper industry. It is unconscionable that the U.S. Government would participate in securing sizable loans for a state-owned copper facility in Mexico at a time when some 40 percent of this Nation's copper workers are without employment. I think that figure recently was 25,000 in Arizona alone.

Mexico is already a net copper-exporting country. Statistics for the past few years indicate that Mexico consistently produces more copper than it consumes and exports the rest. Thus, they are already contributing to the international surplus of copper. Ironically, the logical place for Mexico to dump its increased surplus from Cananea would be next door in the United States because of location.

The additional 100,000 tons per year of copper which would be produced from the expanded Cananea facility will place our already distressed domestic industry at an even greater disadvantage in the world marketplace. The U.S. representatives to the World Bank, our policymakers at Eximbank, seem to disregard this completely, despite the fact that appropriations laws in recent years have included language requiring the Secretary of the Treasury to take action to deal with this problem.

This language, which until recently only applied to U.S. membership in the World Bank and other developmental institutions, was expanded to include the IMF in the continuing resolution of appropriations enacted in December 1982. And rather than to quote it all, the—I believe this is was under a revised section 522 of that resolution. The Secretary shall instruct the U.S. executive directors of these various lending institutions to use voice and vote of the United States to oppose any assistance by these institutions for the production of any commodity for export, it is in surplus on world markets and if the assistance will cause substantial injury to the U.S. producers of the same, similar, or competing commodity.

We think that permanent legislation—this is something that's renewed every year, I believe—we think that permanent insulation, legislation, should be enacted requiring the Secretary of the Treasury to instruct U.S. representatives to international financial and lending institutions to used their voice and vote to discourage developmental projects such as the one at Cananea which would increase capacity in mineral commodites if such commodities are already in surplus on world markets or if such commodities are in direct competition with U.S. producers.

I guess thus far I have given you a violin solo on the plight of the industry. We are struggling for survival. However, we do have good mines and we do think that we can compete given the opportunity.

Now, in July 1983, we are seeing conditions that are improving somewhat. Inflation and interest rates are lower, the leading indicators are rising in the major industrial countries, and there is a somewhat restrained optimism toward economic growth. The price of copper, while still unremunerative for most producers, has been rising slowly. And we think now is a good time to take a look at the future of this strategic domestic industry.

We must decide whether we can afford not to have a domestic copper industry. We think the answer is clear: We must continue to have our own viable supply of copper and not rely solely on unpredictable foreign sources. The adverse impacts of further decline in the U.S. copper industry are not only limited to profits lost, facilities abandoned and jobs forfeited. There could also be significant impacts on the Nation's balance of trade, the size of strategic stockplies, and grave national security implications.

It is definitely in the best interests of this Nation to deal fairly with its domestic copper industry and not further impede its chances for recovery and revitalization through haphazard and irresponsible international lending policies.

I thank you.

[The prepared statement of Mr. Ridinger follows:]

## STATEMENT OF DAVID C. RIDINGER, VICE PRESIDENT, GOVERNMENT RELATIONS, NEWMONT MINING CORP.

I am David C. Ridinger, Vice President, Government Relations, Newmont Mining Corporation. I am here today on behalf of Newmont and its Arizona subsidiaries, Magma Copper Company and Pinto Valley Copper Corporation, to discuss the effects of our present international monetary policies upon the domestic copper industry.

By way of introduction, Newmont Mining Corporation is a leading energy and natural resource company, engaged in exploration, operation and management of domestic and foreign mining and petroleum properties.

Newmont's wholly-owned Arizona subsidiary, Magma Copper Company, produces 10 to 12% of the nation's total refined copper, along with significant amounts of gold, silver, molybdenum-bearing concentrates and sulfuric acid. Magma is a fully integrated copper producer, with two underground mines, concentrators, a smelter, electrolytic refinery and continuous rod casting plant. Newmont also owns and operates Pinto Valley Copper Corporation, a recent acquisition, consisting of open pit mines, a concentrator and leach operation, with annual production of 60,000 ton of copper. This latter facility is presently shut down, due to depressed copper prices.

The importance of copper to this country goes far beyond its value to domestic industries. Copper is a critical element in our national defense programs. Its strategic significance to military hardware and defense equipment makes it imperative that the United States maintain domestic reserves of readily available copper. However, recent international lending activities by our own government are furthering the demise of this critically valuable domestic industry.

The United States has been virtually self-sufficient in copper, producing over 90% of its total consumption in the last 10 years. Despite this self-sufficiency, the domestic price of copper, which is set by the terminal markets, reflects world-wide production, sales and demand. While the market price may be well-balanced during normal and prosperous times, the domestic copper industry is at a serious competitive disadvantage during recessionary times against foreign subsidized, government-controlled facilities, such as those in many Third World nations.

During periods of depressed demand and weak prices, those subsidized mines, for internal political reasons, often ignore basic economic laws of supply and demand and continue production without regard to profit or the needs of the copper markets. In fact, production at the Cananea copper facility in Mexico is actually being expanded substantially, as I will explain further, despite current expectations of ample world-wide supply and continued weak prices. These nationalized mines can operate in this harmful manner because they know that they can secure credit from the international lending institutions, supported largely by U.S. contributions, when operating losses occur. Meanwhile, mineral production in the United States must be curtailed significantly because of the resultant depressed market conditions, with widespread shutdowns and unemployment.

The U.S. industries pay the price for such economic manipulation by subsidized foreign producers. In the case of copper, the United States copper industry is rapidly becoming the surge capacity for the world - with a salable and profitable product only when world consumption of copper is greatest. This imbalance, if allowed to persist over the long term, will diminish the degree of U.S. self-sufficiency in the production of copper, and, ultimately, will diminish the domestic availability of this critical mineral in the event of a national crisis.

The United States copper producers are already at a disadvantage in the world marketplace due to the immense costs of compliance with pollution control regulations - costs which are virtually non-existent in lesser developed countries. The competitive disadvantage with state-owned and subsidized mines is further aggravated by the lending policies of the international financial institutions, such as the World Bank, the International Monetary Fund, the Export-Import Bank, and others which underwrite and often encourage foreign subsidized and uneconomic production of commodities in direct competition with domestic producers and workers. As long as these policies are allowed to continue, the outlook for our own copper industry, and other critical domestic metals industries, is grim.

At present, the U.S. copper industry is moving out of its lowest ebb since the Great Depression. The period from the last quarter of 1981 through the first months of 1983 were unquestionably the most difficult of times since the 1930's, owing to the economic recession and the resultant low demand for copper worldwide.

For the year ending December 31, 1982, U.S. producer prices for copper averaged 73¢ per pound, and several times dropped below the 70¢ per pound level. These prices are below the cost of production for most companies. By early 1982, fourteen of the twenty-four copper mines in the State of Arizona had closed, and significant cutbacks in production and shutdowns had been implemented by every major domestic producer. In Arizona alone, more than 11,000 copper workers were laid off during this period, many of whom still have not returned to their jobs. The impact of these closures and curtailments is particularly severe because most copper producing facilities are located in remote areas where they are the primary employers. Consequently, there are few, if any, job opportunities for the unemployed copper worker.

During this severe domestic setback, the World Bank, through the International Finance Corporation, was arranging a $450 million loan package for the expansion of a copper mine and smelting facility at Cananea, Mexico - only 30 miles south of the Arizona border. In addition, the United States' own Export-Import Bank approved a loan to the same Cananea copper facility in the amount of $75.5 million. With this financing package, the Cananea facility would be able to triple its annual production of copper, from 50,000 to 150,000 tons per year.

The increased capacity at Cananea presents grave consequences for the U.S. copper industry. It is unconscionable that the United States Government would participate in securing sizeable loans for a state-owned copper facility in Mexico at a time when some 40% of this nation's copper workers are without employment.

Mexico is already a net copper-exporting country.

Statistics for the past few years indicate that Mexico consistently produces more copper than it consumes, and exports the rest. Thus, Mexico is already contributing to the international surplus of copper. The logical place for Mexico to dump its increased surplus from Cananea would be next door in the United States.

The additional 100,000 tons per year of copper which would be produced from an expanded Cananea facility will place our already distressed domestic industry at an even greater disadvantage in the world marketplace. The U.S. representatives to the World Bank, and our policy makers at the Eximbank, seem to disregard this completely, despite the fact that appropriations laws in recent years have included language requiring the Secretary of the Treasury to take action to deal with this problem. This language, which until recently only applied to U.S. membership in the World Bank and other developmental institutions, was expanded to include the IMF in the continuing resolution for Appropriations enacted in December, 1982, and I quote:

> ". . . The Secretary of the Treasury shall instruct the United States executive directors of the International Bank for Reconstruction and Development, the International Development Association, the International Finance Corporation, the Inter-American Development Bank, the International Monetary Fund,

> the Asian Development Bank, the African Development Bank, and the African Development Fund to use the voice and vote of the United States to oppose any assistance by these institutions . . . for the production of any commodity for export, if it is in surplus on world markets and if the assistance will cause substantial injury to the United States producers of the same, similar, or competing commodity."

This requirement imposed upon the Secretary of the Treasury should be used as a means of developing practical and fair solutions to the problem of international financing. The Administration is presently seeking an $8.4 billion increase in the U.S. contribution to the International Monetary Fund. The debate surrounding Congressional authorization of the increase should be used as an opportunity to develop new international lending policies. Although statutory requirements along these lines have been included in annual appropriations acts, and have been included in the IMF funding bill which has already passed the Senate, this Committee should encourage permanent legislation requiring the Secretary of the Treasury to instruct the Executive Directors of multinational development banks and the International Monetary fund to evaluate all project loans in light of their impact upon the worldwide supply and demand for individual commodities.

Permanent legislation should be enacted requiring the Secretary of the Treasury to instruct U.S. representatives to international financial institutions to use their voice and vote to discourage developmental projects, such as the one at Cananea, which would increase capacity in mineral commodities if such commodities are already in surplus on world markets or if such commodities are in direct competition with U.S. producers.

The U.S. copper industry is struggling for survival. Now, in July, 1983, conditions have improved somewhat, Inflation and interest rates are lower, the leading indicators are rising in the major industrial countries, and there is a restrained optimism toward economic growth. The price of copper, while still unrenumerative for most producers, has been rising slowly. Now is a good time to take a look at the future of this strategic domestic industry.

We must decide whether we can afford not to have a domestic copper industry. The answer should be clear - we must continue to have our own viable supply of copper and not rely solely on unpredictable foreign sources. The adverse impacts of further decline in the U.S. copper industry are not only limited to profits lost, facilities abandoned and jobs forfeited. There would also be significant impacts upon the nation's balance of trade, the size of strategic stockpiles and grave national security implications. It is definitely in the best interests of this nation to deal fairly with its domestic copper industry and not further impede its chances for recovery and revitalization through haphazard and irresponsible international lending policies.

The CHAIRMAN. Thank you very much.

Senator Hecht, I'll let you go first this time.

Senator HECHT. Thank you. I have a decided advantage since I just came to Washington and I'm not guilty of any of the sins of the past few years. So when I was campaigning of course your statement here is what I heard all around our State of Nevada. The copper mines are all shut down and we're subsidizing Mexico.

What specifically—now this is your business—what specifically would you recommend that we can do to help the copper industry?

Mr. RIDINGER. Well, as I discussed very briefly, I think certainly a good place to begin would be to give firm direction to all our representatives in these lending institutions to not approve loans on mineral, foreign mineral projects unless these are projects that can stand on their two feet.

Now, what has happened in many cases, there is no question that there are rich ore bodies abroad, but in many cases a foreign mine comes on line and there is as a result there is full employment, full sale of product, that foreign country then has to repay the loan of pay the interest on the loan, they cannot afford to lower their production, they have to keep people working—it's their sole economy in many cases, or certainly their major economy. And we think these type of projects are the ones that are literally putting U.S. mines out of business.

We can't compete against that type of thing.

Senator HECHT. I also serve on the Senate Banking Committee, and I don't have that figure in my mind, but something like 140 countries are in the IMF. Something like that.

Mr. RIDINGER. I think that's correct.

Senator HECHT. Pretty close. We're not in a position as 1 out of 140 to determine who gets loans or not.

Mr. RIDINGER. Either in IMF or IFC I think there is a—we have something like 25 percent of the voting power.

Senator HECHT. Twenty-five percent. At IMF we contribute about 25 percent.

Mr. RIDINGER. But I think we have, while we may not have a majority of the votes, we have a if I can call it that, a veto power. Because I think some of those things have to carry by 80 percent. Something like that. That's off the top of my head.

Senator HECHT. We also have the State Department, you know, with their own State ceilings on that.

Mr. RIDINGER. Yes, sir. I understand that.

We've heard a lot here today about the, perhaps the Adam Smith theory of free trade. And our Chairman said that that was great but it doesn't take into account defense. I suppose free trade is a way to go, but if you do away with your own industries you will not have, in the case of minerals, you won't have minerals when you need them. There is a long lead time. You can shut down a copper mine today and put it in the bank so to speak. It doesn't come back up tomorrow when you need it. That's the problem.

Senator HECHT. Do you have much overseas investments on mines?

Mr. RIDINGER. We have some in copper. We have it in gold, some lead and zinc.

Senator HECHT. How does that—how do the costs compare to domestic mining?

Mr. RIDINGER. Well, I suppose a lot depends on not necessarily costs but the ore body. Is it 5 percent copper or less than 1 percent. Probably copper mines in the United States are higher costs, although people like Phelps-Dodge I know have very low cost mines, good ore bodies, big ore bodies.

We have big ore bodies in Arizona. It's hard to say generally whether they are higher or lower. I think you have to look at specifics. I would, I would say probably Chile—we don't have property in Chile—but Chilean mines would be low cost or higher grade.

Senator HECHT. Where are your mines?

Mr. RIDINGER. Foreign?

Senator HECHT. Yes.

Mr. RIDINGER. We have an interest in the Southern Peru Copper Corp. in Peru. We are part owner of Palabora in South Africa. We have some gold in Australia. Those are the two main copper: Peru and South Africa.

Senator HECHT. Getting back again to the situation in Mexico 30 miles behind our border, no clean air standards and the much cheaper cost of production because of wages. I know you're—and your groups talk about this all the time. Do you have any specific information that we could have to start formulating some policies? You know, on general terms we've got to come up with something more specific.

Mr. RIDINGER. Well, again, I think the firm direction to our voting members in these international lending institutions is the first step. Now, what I quoted today was from the—what the resolution on the appropriations—continuing resolution. That's got to be done every year, as I understand it.

The CHAIRMAN. That's correct.

Mr. RIDINGER. I think what I'm advocating is something permanent.

Senator HECHT. Yes. That was in my mind, the IMF. We're not even sure whether the House is going to fund the IMF.

Mr. RIDINGER. Right.

Senator HECHT. And so I mean we can't lay down laws that might not even happen.

Mr. RIDINGER. I understand.

Senator HECHT. So that's why I'm searching too. Anyway, besides today, in the future if you'll stay in contact, if you can help us out to formulate some of these things, I've always felt as a businessman the business community knows more about their business than the Government does.

Mr. RIDINGER. Well, we hope so.

Senator HECHT. If we can just get you working——

The CHAIRMAN. If you don't, we're all in trouble.

Senator HECHT. If we can just get you working again.

Mr. RIDINGER. That would be helpful.

Senator HECHT. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you. And thank you very much for both your patience and your testimony. From my standpoint at least it was well worth your wait to have you testify here today. I do very much appreciate it. Thank you.

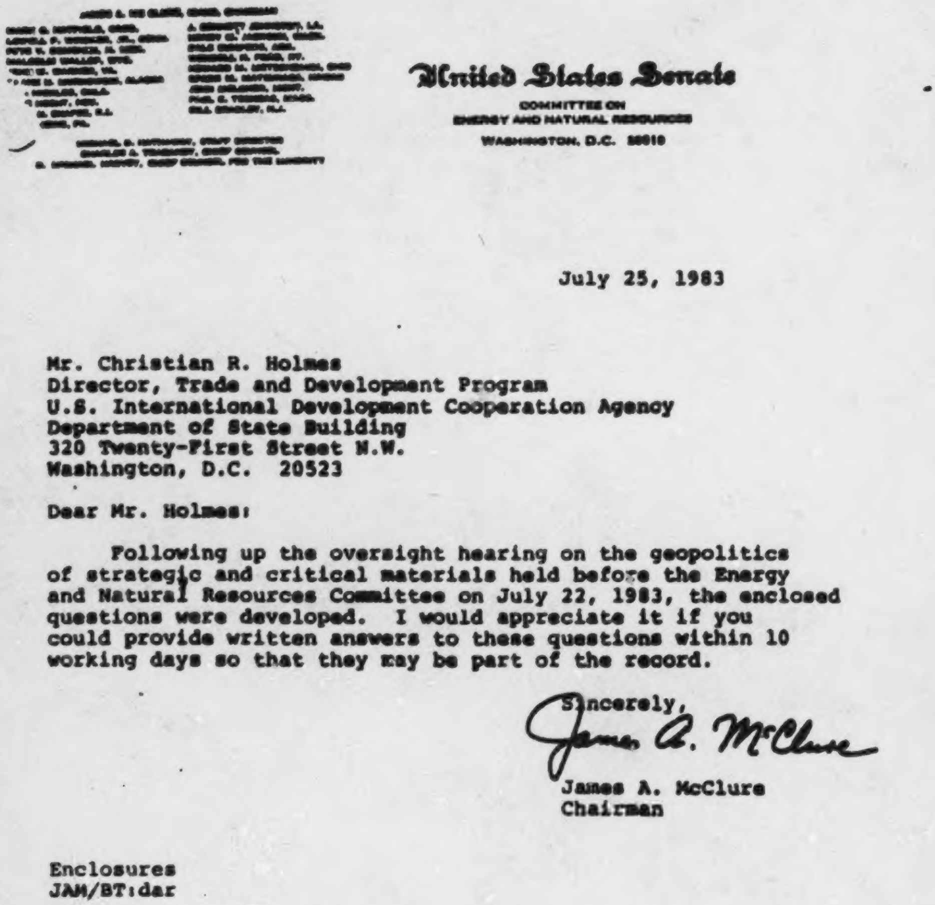
The record will remain open for a period of 2 weeks so that members of the committee who desire to submit questions in writing for responses for the record will have that opportunity to submit those questions. We will make those responses a part of the record when received.

The committee will stand adjourned.

[Whereupon, at 4:07 p.m., the hearing was adjourned, subject to the call of the Chair.]

# APPENDIXES

## APPENDIX I.—ANSWERS TO ADDITIONAL QUESTIONS



United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, D.C. 20510

July 25, 1983

Mr. Christian R. Holmes
Director, Trade and Development Program
U.S. International Development Cooperation Agency
Department of State Building
320 Twenty-First Street N.W.
Washington, D.C. 20523

Dear Mr. Holmes:

Following up the oversight hearing on the geopolitics of strategic and critical materials held before the Energy and Natural Resources Committee on July 22, 1983, the enclosed questions were developed. I would appreciate it if you could provide written answers to these questions within 10 working days so that they may be part of the record.

Sincerely,
James A. McClure
James A. McClure
Chairman

Enclosures
JAM/BT:dar

Question: What steps would you recommend the U.S. Government take to formulate a foreign policy that has, as a goal, reliable access for mineral investments abroad for national economic security?

Answer: IDCA believes that foreign assistance and foreign policy should be utilized to meet U.S. economic, national security, and political goals vis-a-vis strategic and critical minerals. IDCA implements a three-pronged program. Through the programs of the Agency for International Development, the Overseas Private Investment Corporation, and the Trade and Development Program IDCA endeavors to assure reliable access for foreign minerals investment. These programs rely heavily on projects that lead to economic growth and development in developing countries and utilize the private sector to the fullest possible extent.

IDCA was assigned an important role in the process of securing access to supplies of strategic and critical minerals by President Reagan's April 1982 National Materials and Minerals Program Plan and Report to Congress. To better fulfill this role, we recommend, and hope to initiate, greater cooperation on this issue between IDCA and the Departments of State and Interior and the Cabinet Council on Environment and Natural Resources.

Question: In your view, has the international political and economic climate, in recent years, been less favorable to U.S. investments in developing countries? If yes, what factors have contributed to this situation?

Answer: There has been general improvement in the international political and economic climate in recent years that is more favorable to U.S. investments in developing countries than in past years. Many developing countries have come to the realization that they cannot develop their economies on a large scale without the cooperation of developed countries and their associated private sectors (especially large mining companies and multinational corporations) which have access to world markets and marketing systems, possess and control mining technologies, and can call upon the managerial and financial resources needed for development. Many countries also seem to have realized that nationalization and expropriation policies only reduced much-needed foreign investment funds and threatened to cut the flow of essential technical assistance at a time when the worldwide economy was in a state of recession.

Many countries have chosen to adopt policies other than expropriation in pursuing their efforts to gain greater control over their natural resources and to increase the benefits they derive from their productive process. Such policies include requirements that foreign investors form joint ventures with majority local ownership, restrictions on repatriation of profits, and demands for increased transfers of technology and greater local control of management.

This change in attitude seems to be reflected in a change in behavior as well, as demonstrated by the following:

- The number of new disputes involving U.S. private direct foreign investment dropped to five in the period between March 1, 1980 and September 30, 1982 from 18 new cases between March 1, 1977 and February 29, 1980. These five disputes represent the smallest number reported for any comparable period since 1960.

- There were no new disputes involving the mining industries during the 1980 - 1982 period as compared with six new disputes during the 1977 - 1980 period.

Question: Does foreign mineral investment still provide an effective means to manage and limit resource vulnerability?

Answer: IDCA believes that foreign mineral investment remains an effective means of managing and limiting U.S. resource vulnerability. It is one of the few avenues available to assure adequate supplies of critical minerals in the absence of (1) sufficient quantities of mineral substitutes at the quality levels needed to meet many U.S. national security and industrial needs and (2) economical lodes of minerals within the United States.

In fact, OPIC's and TDP's minerals initiatives are major bilateral tools to revive investor interest in developing country mining projects as the U.S. and worldwide economy enters an expansionary phase. OPIC provides insurance and financing to encourage U.S. mining companies to direct their efforts towards deposits of strategic and critical minerals located in developing countries and gain access to diverse sources of minerals supplies. TDP finances survey teams of technical experts to advise U.S. mining companies on potential projects involving deposits of strategic and critical minerals, as well as feasibility studies on a project-specific basis to encourage U.S. companies to invest in foreign minerals projects.

Question: What, if any, improvements could be made to the Overseas Private Investment Corporation in order to further make investments in LDCs competitive with investments in developed countries?

Answer: Legislative improvements in the program of the Overseas Private Investment Corporation (OPIC) are not felt to be needed to meet the needs of U.S. natural resources companies in foreign mineral development. Recent decreases in OPIC mineral activity are felt to reflect the generally depressed state of the minerals industry rather than defects in the OPIC program.

Question: How much foreign aid in fiscal year 1983 was appropriated to developing countries for the purpose of expanding the mineral sector? Is this more than in fiscal year 1981 or 1982?

Answer: No funds were specifically appropriated to developing countries for the purpose of expanding the mineral sector; however, foreign aid funds are used to promote general economic growth and development and, thereby, encourage developing countries to keep up their minerals production.

Official Committee File

ADVANCE PRESSURE CASTINGS·CORP·
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FOR ECONOMY

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SENATE COMMITTEE ON
ENERGY AND NATURAL RESOURCES
RECEIVED
AUG 17 1983
WASHINGTON, DC 20510

August 5, 1983

Honorable James A. McClure
3121 Dirksen Senate Office Building
First Street, N.E.
Washington, D. C. 20510

Dear Senator McClure:

We are pleased to hand you herewith answers to the questionnaire provided by you with your letter of June 28, 1983.

Please forgive the delay in responding which was caused by vacation.

Sincerely yours,

Alfred Schneier, Jr.
Chairman of the Board

AS:db

Enclosure

# QUESTIONS FOR HEARING ON GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS

## Supply

Question: From which countries do you import the strategic minerals necessary to your industry?

Answer: We rely on supplier base.

Question: What steps have you taken to insure the long-term adequacy of your supply?

Answer: Virtually none.

Question: If your supply were cut off, where would you obtain necessary minerals and materials?

Answer: Government stockpile, open market, etc.

Question: Have you encountered any change in the accessibility of supply from when you first began purchasing materials from a particular country?

Answer: N/A

Question: Why do you purchase materials from that particular region?

Answer: N/A

Question: Do feasible substitutes exist for the minerals or materials that you use?

Answer: No.

## Research and Development

Question: Do you have any ongoing research and development projects? If so, please describe them.

Answer: The American Die Casting Institue is conducting research but not on minerals.

Question: What areas of research would you find most useful?

Answer: N/A

Question: In your view, who should be doing this type of research?

Answer: N/A

Question: How successful do you feel Federal research programs have been? What could be done to improve these programs?

Answer: N/A

## Diplomacy Questions

Question: What should the U. S. Government be doing to make foreign sources of supply more secure?

Answer: Provide more than adequate government held stockpile of strategic materials.

Actively develop sources of strategic minerals, if they so exist, within our 50 states in a manner compatible with both environmental and other considerations.

Question: Do you have any thoughts or recommendations as to what the Federal Government could do to both maintain access in the short term to raw materials, while at the same time recognizing social conditions in these countries which could eventually lead to a lack of access?

Answer: Again, provide more than adequate stockpile. Also, actively pursue the search for viable alternate minerals which are "home grown."

Question: Do you support the use of IMF money to encourage overseas development of strategic minerals and materials?

Answer: N/A

Question: What is the outlook for strategic minerals security in view of the stockpiles held by our allies in NATO and SEATO?

Answer: We have insufficient information to respond to this question.

Question: Do you foresee a strategic minerals cartel being formed in the future?

Answer: We feel this is a very realy possibility.

## PRESIDENT'S NATIONAL MATERIALS AND MINERALS PROGRAM PLAN AND REPORT TO CONGRESS

| | |
|---|---|
| Question: | The President in his report addressed 5 components of the national minerals policy: land availability, minerals data collection, research and development, regulatory reform and stockpile policy. Based on the President's recommendations in these 5 areas, what do you identify that has been accomplished since the report was issued in April 1982? |
| Answer: | We have insufficient information to respond to this question. |
| Question: | What has not been done which you feel should be? |
| Answer: | More emphasis on recycling. Die casting represents a most important major industry that uses recycled aluminum. Also, restraint of export of strategic materials should be implemented. |
| Question: | Are there any issues which you feel are critical to a successful national minerals policy that weren't addressed in the President's Program Plan? |
| Answer: | Yes. It is estimated that approximately 4-1/2 billion pounds of secondary aluminum scrap will be generated in 1983; of which, it is estimated, some 600 million pounds is expected to be exported. |

## Domestic Situation

Question: How can we stimulate the recycling and conservation of strategic minerals?

Answer: Die casting industry already exists on recycled aluminum. We advocate the use of more die castings and products of similar manufacturing processes that also use recycled strategic minerals. This can be stimulated by making government procurement agencies aware of the advantages of doing the above.

Question: Do you feel that the National Defense stockpile is a good method for maintaining a secure and adequate supply of strategic minerals?

Answer: Yes.

Question: Do you favor selling materials in surplus as a means of gaining revenue in order to replenish the stockpile with materials that are presently deficient?

Answer: Yes.

Question: Do you advocate private stockpiling?

Answer: No.

Question: Could private stockpiling be effectively encouraged through Government subsidies or tax breaks?

Answer: Possibly so.

Question: Do you favor the legislative proposal to increase the stockpile by exchanging U. S. agricultural products abroad for necessary raw materials?

Answer: Yes.

Question: Do you believe the Government should spend money to make low grade domestic minerals deposits developable if they are characterized as critical?

Answer: Only on need basis.

Comment requested: Please comment on the Federal Programs related to strategic minerals which are administered by the Bureau of Mines and the U. S. Geological Survey.

Answer: We have insufficient information to comment.

Question: Do you favor floor price guarantees for domestic minerals?

Answer: No.

Aerospace Industries Association of America, Inc.

Office of the President

August 16, 1983

AUG 17 1983

Official Committee File

The Honorable James A. McClure
Chairman, Energy and Natural Resources
United States Senate
Washington, DC 20510

Dear Senator McClure:

Thank you for your letter of June 28th following up on the oversight hearing on the geopolitics of strategic and critical materials held before the Energy and National Resources Committee on June 20, 1983. We are pleased to answer the questions that you have sent.

If we may be of further service, please contact us.

Yours very truly,

Karl G. Harr, Jr.

1725 DeSales Street, N.W. Washington, D.C. 20036 • (202)429-4600

## SUPPLY

Q. - From which countries do you import the strategic minerals necessary to your industry?

A. - While some of the member companies do not import directly, they are extremely reliant on imports by their suppliers from Canada, Brazil, South Africa, Malaysia, Zaire, Zimbabwe, Zambia, Finland, Jamaica, Norway and Australia.

Q. - What steps have you taken to insure the long term adequacy of your supply?

A. - The following steps have been taken where technically and economically feasible.

Negotiation of one to three years' supply contracts.

Development of second or multiple sources.

Negotiation of vendor stocking programs.

Tracking of future commodity availability determinants.

Long term forecasting and planning of supply requirements with vendors.

Development of approved alternate substitute materials.

Investigation of design changes to reduce or eliminate use of critical materials.

Q. - If your supply were cut off, where would you obtain necessary minerals and materials?

A. - For defense contracts and/or essential civilian needs: by use of priority ratings, allocations and stockpile releases as provided by law and executive branch action under then-existing circumstances. Also, alternate sources if available.

Q. - Have you encountered any change in the accessibility of supply from when you first began purchasing materials from a particular country?

A. - There is no direct experience purchasing directly from abroad; however, our suppliers (who purchase strategic minerals which are contained in the products that they make and sell to us) have experienced some significant changes notably in the areas of cobalt and chromite.

Q. - Why do you purchase materials from that particular region?

A. - In every case the reasons for doing so are economic advantage (price, delivery and quality) and/or necessity based on geographic availability.

Q. - Do feasible substitutes exist for the minerals or materials that you use?

A. - In some cases, but not in others.

## RESEARCH AND DEVELOPMENT

Q. - Do you have any ongoing research and development projects? If so, please describe them.

A. - This would vary from company to company.

Q. - What areas of research would you find most useful?

A. - Identification of practical substitutes for cobalt, chromium, tantalum, and titanium.

Q. - In your view, who should be doing this type of research?

A. - The federal government should sponsor long-range research for new materials and substitution technologies, for the qualification of alternate materials for defense applications, and for the substitution and conservation of strategic materials used in other government-sponsored programs.

Q. - How successful do you feel federal research programs have been? What could be done to improve these programs?

A. - Federal research programs have been successful in identifying and developing new, less critical materials, candidates for strategic materials substitution. However, such R & D is relatively new and will have to be sustained to make an impact on current materials use patterns. Much more is needed to develop an information stockpile on the data and information being generated. Also, we recommend designing critical materials out of weapon systems to the extent practical.

## DIPLOMACY

Q. - What should the U.S. government be doing to make foreign sources of supply more secure?

A. - The U.S. should continue to maintain diplomatic relations with the respective countries, and indicate a willingness to provide reasonable economic and military support to prevent disruption and intervention by the Eastern Bloc nations.

Q. - Do you have any thoughts or recommendations as to what the federal government could do to both maintain access in the short term to raw materials, while at the same time recognizing social conditions in these countries which could eventually lead to a lack of access?

A. - The government could be making contractual arrangements for materials that are not available domestically. It could increase U.S. stockpiles, increase U.S. exploration and permit selective mining on U.S. lands.

Q. - Do you support the use of IMF money to encourage overseas development of strategic minerals and materials?

A. - Yes, within the bounds of sound economic policy.

Q. - What is the outlook for strategic minerals security in view of the stockpiles held by our allies in NATO and SEATO?

A. - This becomes a question of distribution and which of these countries has the highest priority during a critical period. The emergency preparedness of U.S. alliances appears to be prejudiced by the short-term stockpiling, if any, by some countries, but we understand from Ambassador Walters' May 19th testimony before your committee, that this question is currently under review and discussion with them.

Q. - Do you foresee a strategic minerals cartel being formed in the future?

A. - Attempts will be made which will result in minor disruptions. We do not anticipate any permanent cartels.

## PRESIDENT'S NATIONAL MATERIALS AND MINERALS PROGRAM PLAN AND REPORT TO CONGRESS.

Q. - The President in his report, addresses five components of the national minerals policy: land availability, minerals data collection, research and development, regulatory reform, and stockpile policy. Based on the President's recommendations in these five areas, what do you identify that has been accomplished since the report was issued in April 1982?

A. - Speaking of only the stockpile item, an initial investigation of the quality of the materials has been made. It appears that stockpile policy has benefitted only slightly, although it is the single most important element of the President's program because the stockpile is so essential to National Security.

Q. - What has not been done which you feel should be?

A. - Additional purchases of critical material have been discussed, however they have not been taking place. Also, we support the consolidation of the management of the government stockpile.

Q. - Are there any issues which you feel are critical to a successful minerals policy that were not addressed in the President's program plan?

A. - The import policy and the consolidation of the management of the government stockpile. As long as management is fragmented and subject to political pressures there will not be an effective management of the materials nor the timeliness that is necessary for success of the plan.

## DOMESTIC SITUATION

Q. - How can we stimulate the recycling and conservation of strategic minerals?

A. - Provide incentives to industry and the public by development of more economical reclamation processes.

Q. - Do you feel that the National Defense Stockpile is a good method for maintaining a secure and adequate supply of strategic minerals?

A. - Only in the short term, but it is perhaps the only workable method for the short term. It could become a good system if there is a monitoring and constant upgrading of its quality plus management by an independent, non-political body.

Q. - Do you favor selling materials in surplus as a means of gaining revenue in order to replenish the stockpile with materials that are presently deficient?

A. - Yes, but not by "dumping" large quantities with severe market effects.

Q. - Do you advocate private stockpiling? If so, do you engage in this practice? Would you like to increase your inventory? If not, why? Could private stockpiling be effectively encouraged through government subsidies or tax breaks?

A. - Possible alternative, although it will not be considered with current interest rates, the trend to reduce inventories and efforts to maximize on-time deliveries of raw materials for production use. In view of the substantial impact of private stockpiling on profitability it may be desirable to consider some form of incentive to private industry as a substitute for federal funding.

Q. - Do you favor the legislative proposal to increase the stockpile by exchanging U.S. agricultural products abroad for necessary raw materials?

A. - Yes.

Q. - Do you believe the government should spend money to make low grade domestic minerals deposits developable if they are characterized as critical?

A. - Yes, if spent to develop methods for economic exploitation, but not as a subsidy for production. Also, only if this can be proven on a case by case basis to be more economical then stockpiling the necessary materials so as to provide a supply sufficient to permit development to occur after the prospect of a defense preparedness emergency is clearly visible.

Q. - Please comment on the Federal programs related to strategic minerals which are administered by the Bureau of Mines and the U.S. Geological Survey.

A. - To the extent which an industrial user has insight to these important programs, this has been touched on in answer to other questions.

Q. - Do you favor floor price guarantees for domestic minerals?

A. - No.

AMAX

R. G. Dunn
Senior Vice President
Amax Metals Group

Official Committee File

August 12, 1983

SENATE COMMITTEE ON
ENERGY AND NATURAL RESOURCES
RECEIVED
AUG 15 198
WASHINGTON, D.C. 20510

The Honorable James A. McClure
Chairman, Senate Energy and
Natural Resources Committee
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

I appreciate the opportunity to comment further on the geopolitics of strategic and critical materials. Enclosed are answers to your questions of June 28 that further explain some of the points I addressed in my testimony.

I am aware that since the June 20 hearing, where I testified at some length about the history of the cobalt activities of the U.S. stockpile, portions of my testimony regarding cobalt have been extracted and used to support floor debate regarding the Defense Production Act's reauthorization. I would like to take this opportunity to reiterate my Company's position on the use of the DPA, in the event there may be a misunderstanding of that position, and offer for the record some additional material on cobalt resources worldwide.

AMAX believes the Defense Production Act is a necessary adjunct to a national strategic minerals policy. Government should consider alternative methods by which stockpile goals may be reached and the security of material sources ensured. One such method is to contract for raw materials from a diversity of sources and to enhance domestic processing capabilities. The former will guard against the interruption of supplies from any one source, and the latter, while contributing to the process of filling the stockpile, will also provide an "insurance policy" in the event of a stockpile drawdown. The DPA can be an appropriate tool for helping secure adequate resources at the various stages of mining and processing materials. To provide for long term stability, however, such support should be based on sound economics so a project is viable over time.

AMAX INC. • TWO GREENWICH PLAZA, P. O. BOX 1705, GREENWICH, CONNECTICUT 06830 • (203) 629-6522

The Honorable James A. McClure
August 12, 1983
Page Two

With respect to cobalt, my testimony attempted to present the facts surrounding the so-called cobalt shortage crisis of the late 70's and shed some light on the number of cobalt resources worldwide. AMAX does not dispute the fact that the U.S. is in need of stable supplies of cobalt. We do believe, however, that numerous cobalt resources exist outside of Zaire and Zambia and the real problem lies in not only the ability to economically produce these sources, but to assure adequate processing capability.

The attachment at the end of the June 20 testimony lists all known potential and producing sources for cobalt. With current depressed prices, most if not all of these sources are uneconomic and should not, in a strict definitional sense, be categorized as reserves. For example Zambia, Zaire and all the nickel producers are currently recording losses on their mining operations. Furthermore, the economics of byproduct cobalt production are generally more sensitive to copper or nickel prices than to cobalt prices. Thus it is a complex issue to separate cobalt resources from reserves. It is reasoned, however, that during a crisis the cobalt resources could become economically viable and therefore must be considered for strategic purposes.

I have enclosed an additional page listing all the world's known cobalt production. It should be noted that there is little primary production of cobalt today; Zaire and Zambia account for around 70-75% of cobalt produced from copper, nickel and lead/zinc mines. In some cases, cobalt is mined but not recovered, as is the case in the Missouri lead/zinc belt. It is the lack of adequate processing capacity in the U.S. that makes the Missouri cobalt and other similar unrecovered sources useless. If we are indeed vulnerable, we believe that vulnerability exists not as much in access to cobalt resources outside of southern Africa, but in the capacity to process what, in some cases, is already mined.

The Honorable James A. McClure
August 12, 1983
Page Three

Again, I appreciate the opportunity to testify before your Committee and hope the answers to your questions and additional information on cobalt are of some use in your efforts to assess the U.S. position in the world minerals arena.

Sincerely,

RGD/jy

Enclosure

## Supply

Q. From which countries do you import the strategic minerals necessary for your industry.

A. Australia, Botswana, Canada, Chile, Peru, France, Mexico, New Caledonia, S. Korea, Brazil, Spain, South Korea, Turkey, Honduras.

Q. What steps have you taken to insure the long-term adequacy of your supply.

A. AMAX has supported the growth in world minerals trade and, hence, encouraged diversity of supply by means of:

a) Direct foreign investment in plant and facilities in iron-ore, nickel-cobalt, copper, tungsten, silver, and zinc projects in Australia, Africa, N. America (Canada), and Central America.

b) Exploration projects in nickel-cobalt, gold and silver, copper, lead, zinc, columbium, tantalum, tungsten and molybdenum.

c) Not opposing international lending practices that foster primary minerals development in less developed countries.

Q. If your supply was cut off, where would you obtain necessary minerals and metals.

A. In principal, AMAX favors policies encouraging mineral development and leading to supply diversity. Alternate sources should be negotiable should cut-off occur. Through encouragement of world-wide mineral developments, particularly those utilizing transnational strategies involving diverse commercial and development banks and consumers, the probability of arbitrary supply cut offs, other than those due to wartime, is lessened. AMAX maintains product inventories for the event of short-term dislocation. In the case of long-term cutoff, AMAX would look to the strategic stockpile where appropriate.

## Supply Continued

Q. Have you encountered any change in the accessiblity of supply from when you first began purchasing materials from a particular country.

A. Changes often occur in the arrangements between the purchasers and concentrate/intermediate product suppliers due to active competition in the commercial terms offered. Longer-term contracts may not be renewed for similar reasons and also because recession has temporarily reduced overall supplies of ores and concentrates to the market making the competition keener.

Q. Why do you purchase materials from that particular region.

A. AMAX must secure the best terms available for material of the correct specification for its smelters and refineries. Ore, concentrate, and intermediate product supplies from a particular region arise because of the comparative advantage that the region has in mining and processing the ore.

AMAX attempts to diversify its materials suppliers as much as possible.

Q. Do feasible substitutes exist for the minerals or materials that you use.

A. No.

## Diplomacy Questions

Q. What should the U.S. Government be doing to make foreign sources of supply more secure?

Diplomacy Questions Continued

A. The minerals industry is international in character and operates most efficiently under free market conditions with a minimum of government intervention. Government involvements in the past have contributed to situations which ultimately resulted in unstable markets and poor financial returns for minerals producers. We feel that if left to its own devices, a freely operating market will produce the best returns for producers. This will provide the capital for developing economic projects, based on demand, and such new development will encourage diversity of supply, which is this country's best hedge against supply disruptions.

Q. Do you have any thoughts or recommendations as to what the Federal government could do to both maintain access in the short term to raw materials, while at the same time recognizing social conditions in these countries which could eventually lead to a lack of access?

A. See pages 11-12 of my testimony for suggested government actions to help assure access to needed materials.

Q. Do you support the use of IMF money to encourage overseas development of strategic minerals and materials?

A. There has been much discussion in recent months about the problems being caused the U.S. mining industry by the actions of the IMF and the multinational lending institutions. First, it should be clarified that the IMF's function is not to finance overseas projects. Compensatory finance and temporary balance of payments support by the IMF, as well as project-related commercial and multinational bank lending, is consistent with the foreign policy objectives of most Western nations. Without such support, influence on certain countries could be lost and the likelihood of increased Soviet bloc influence through provision of goods and services to the mining sector would be advanced. Maintenance of output is often necessary to sustain foreign exchange earnings needed for development programs and for the growth of fragile secondary and tertiary industries. It is also necessary to prevent political upheaval and social disruption and to protect the future of production capability of the existing capacity.

Diplomacy Questions Continued

The current problems facing domestic mineral producers can be directly attributed to the world economic recession. Without debating the role of the IMF, World Bank or commercial banks in mineral industry problems, any improvement in the situation will have to come from economic recovery. Concerted and coordinated efforts on the part of governments, industry and banking to achieve economic stability and initiate growth will go a long way to rectify mineral industry problems. Thus, any IMF activities that are directed toward improving economic conditions have to be considered beneficial.

Q. What is the outlook for strategic minerals security in view of the stockpiles held by our allies in NATO and SEATO?

A. With regard to the stockpiles of critical materials held by our allies, it is probable that they face the same questions the U.S. faces in attempting to plan for national emergencies. A number of our allies, including France, the U.K., Germany, Sweden and Japan do maintain stockpiles of varying size although they, like the U.S., generally stockpile only enough materials for an emergency of limited duration. Japan and some countries of the EEC have also taken the additional step of encouraging new mining projects in the Third World through establishment of long-term contracts and the financing of this production by banks within the respective developed countries. The impetus for this type of arrangement is, in part, to secure and diversify their sources of supply of basic materials with loan arrangements tied into a supply assurance contract. For example, German banks have financed a number of copper, nickel and cobalt mines in the Pacific Basin and the Southern Hemisphere that have obligations to deliver metal to West German industry.

Q. Do you forsee a strategic minerals cartel being formed in the future?

## Diplomacy Questions Continued

A. The establishment of OPEC has raised fears about the formation of mineral cartels. Strategic as they may be to the defense and essential civilian needs of the U.S. and its allies, nonfuel minerals represent a relatively small trade account of the importers but, in many cases, a very large source of hard currency to Third World exporting countries. With billions of dollars in foreign debt to service, exports become an overwhelming consideration to the economic survival of countries where minerals are sometimes the only present source of hard currency. Even in times of rebellion or revolution, continuity of mineral exports are likely to be assured by the need to shore up the country's balance of payments. We feel it would be extremely difficult to get a majority of the mineral-rich developing nations to agree to a cartel arrangement where their production levels and selling prices would be jointly controlled over long periods of time.

## Domestic Situation

Q. How can we stimulate the recycling and conservation of strategic minerals?

A. In principal, the market, through the price mechanism, should provide the right balance between primary and secondary industries and depletion and conservation. Removal of distortions favoring primary production over recycling and conservation such as those in the tax system and freight rates would facilitate this. For strategic materials that present technical problems for recycling that are not being resolved by the private sector, government involvement in basic research is warranted.

Q. Do you feel that the National Defense stockpile is a good method for maintaining a secure and adequate supply of strategic minerals?

Domestic Situation Continued

A. AMAX feels the government has a preeminent responsibility for ensuring the adequacy of critical and strategic minerals for national defense purposes, and that stockpiling of such materials is the best way to ensure availability during times of national emergency. We oppose any use of the stockpile as an economic or budgetary mechanism; we also oppose economic releases from the stockpile or the establishment of a separate economic stockpile to accommodate consumer needs during periods of high prices or uncertain supply. We feel consumers have an obligation to maintain prudent inventories to take care of price fluctuations or supply disruptions, except during times of national emergency.

Q. Do you favor selling materials in surplus as a means of gaining revenue in order to replenish the stockpile with materials that are presently deficient?

A. We have no objection to the selling of surplus stockpile materials as a means of generating revenue for stockpile purchases, so long as stockpile goals are consistently determined, carefully monitored and judiciously revised only when long-term conditions dictate.

Q. Do you advocate private stockpiling? If so, do you engage in this practice? Would you like to increase your inventory? If not, why? Could private stockpiling be effectively encouraged through Government subsidies or tax breaks?

A. Private stockpiling, i.e., industry-held stocks of domestically produced critical and strategic minerals, perhaps with attendant tax incentives, is an interesting concept, but one for which we have seen no real government or industry interest.

Q. Do you favor the legislative proposal to increase the stockpile by exchanging U.S. agricultural products abroad for necessary raw materials?

Domestic Situation Continued

A. Exchanging agricultural products abroad for necessary raw materials seems a feasible approach to meeting some national defense stockpile goals. Because such exchanges require that the Department of Agriculture be reimbursed from the stockpile transaction fund in an amount equal to the value of the traded surplus agricultural products, we do feel that such exchanges should be strictly limited to ones in which priority stockpile items are acquired, in order to best serve stockpile needs and to preserve scarce stockpile acquisition funds.

Q. Do you believe the Government should spend money to make low grade domestic minerals deposits developable if they are characterized as critical? Do you favor floor price guarantees for domestic minerals?

A. AMAX believes the national defense stockpile was created to assure the U.S. a supply of "critical" and strategic materials for defense purposes; we do not support governments involvement in purchasing critical minerals for any other purpose. Any government investment, whether it be purchases or loan guarantees for securing raw materials or finished product should be for defense related purposes. We do not believe it is in the best long term interests of our country to allow government subsidization of uneconomic projects. The market forces will provide the materials necessary to meet civilian needs of strategic and critical materials. The guaranteeing of floor prices for domestic minerals is a government subsidization and ultimately injects excess capacity in a market that only serves to harm the long-run profitability of existing producers.

Research and Development

Q. Do you have any ongoing research and development projects? If so, please describe them.

Research and Development Continued

| | |
|---|---|
| A. | AMAX through its Engineering and Technology Division implements R&D programs for extraction and conversion of natural resources. The focus is to obtaining higher metal yields and on profitable recovery of minerals from lower grade ore bodies that were previously considered uneconomic to mine. Our research laboratories in Golden, Colorado and Carteret, New Jersey provide technical leadership and support in extractive process technology to the operating divisions of the Company.<br>AMAX's metallurgical and chemical research laboratory at Ann Arbor, Michigan conducts a comprehensive program of basic and applied research on physical, metallurgical and chemical properties of molybdenum, its alloys and compounds. The scope of research is expanding to include the industrial uses of nickel, tungsten, zinc and magnesium. AMAX provides extensive technical service and product development assistance to customers in an effort to expand and diversify the uses of our metal products in their various forms. |
| Q. | What areas of research would you find most useful? |
| A. | The most useful areas of research to us are those which allow us to produce our products more efficiently and to market them successfully as outlined above. |
| Q. | In your view, who should be doing this type of research? |
| A. | University and Federal research programs augment our own efforts and we are constantly aware of the need to coordinate with those areas. The information needed to solve the problems facing our industry cannot be generated solely within our own laboratories. It must result from a comprehensive program as carried out by both public and private sector researchers. |
| Q. | How successful do you feel Federal research programs have been? What could be done to improve these programs? |

## Research and Development Continued

A. Federal research programs to alleviate minerals vulnerability, specifically those sponsored by the U.S. Bureau of Mines, have in general been properly targeted. These programs could be improved in the following ways:

a) Maintain closer liasion with industry in developing an experimental approach to the problem which ties in with commercial factors.

b) Continue to re-emphasize assigned priorities throughout the project life -- try to insulate the project from changing political influences.

c) Improve the transfer of research results to the private sector.

We strongly support the research objectives of the Bureau of Mines and would like to maintain very close ties with their programs.

## President's National Materials and Minerals Program Plan and Report to Congress

Q. Are there any issues which you feel are critical to a successful national minerals policy that weren't addressed in the President's Program Plan? What has not been done which you feel should be?

A. AMAX recognizes that the President's National Materials and Minerals Program Plan is the first in 30 years and represents a successful and coordinated effort among 26 federal agencies. This coordinating effort is commendable but at the same time, should have underscored the need for a policy office with adequate authority over the 26 agencies to implement the plan. Even though the Cabinet Council had this directive, the effort fell short of having any real impact on the government's diverse programs that affect minerals and materials, specifically in resolving any of the conflicting policies existing among these agencies.

President's National Materials Continued

AMAX believes one of the greatest services a national minerals policy could perform is to provide a mechanism to review federal actions and determine their ability to either enhance or jeopardize the basic policy of maintaining a strong mineral base. AMAX suggests one way of beginning to review federal actions that may negatively impact minerals production is through an Executive Order implementing the 1970 and 1980 Minerals-Materials Policy Acts. Such a review of a federal program impact on mineral resources could be done within and as an addition to the environmental analysis mandate under NEPA.

Q. The President in his report addressed 5 components of the national minerals policy: land availability, minerals data collection, research and development, regulatory reform, and stockpile policy. Based on the President's recommendations in these 5 areas, what do you identify that has been accomplished since the report was issued in April 1982?

A. Land Availability. There is still no clear accounting of how much land has been withdrawn from mineral activities. Even though the Bureau of Mines is attempting a detailed analysis of land withdrawals and their impact on mineral exploration, the first report, which covers only three states, is still not completed. Similarly, mineral data continues to be collected on wilderness study areas but is not expected to be analyzed or interpreted into policy positions until 1985. Meanwhile, the Administration has administratively withdrawn areas from the mineral leasing laws and Congress continues to designate wilderness. Together these actions have effectively withdrawn millions more acres from mineral exploration. If one of the government's policies is to encourage and enhance domestic mineral production, many administrative actions, including wilderness recommendations, work against this overall policy. One of the best ways to ensure an adequate, stable supply of minerals to the U.S. is to provide private enterprise the incentive of exploring for and developing ore deposits. This means full access to public lands and retention of the General Mining Laws.

President's National Materials Continued

Minerals Data Collection. In their on-going efforts under existing authority, the Bureau of Mines and the USGS continue to collect mineral data with much cooperation from the private sector. Even though helpful, such reconnaissance and mapping efforts should never be construed as adequate for determining economic mineral potential; discovery of an economic ore body depends on market factors, technology, continued access to the same lands and the incentives for the private sector to develop the mineral resource.

Research and Development. Budget cuts have hampered the Bureau's ability to engage in extensive R&D but on-going programs are valuable and complement the President's policy (see question #4, R&D).

Regulatory Reform. The Department of the Interior has taken the subject to heart and made numerous revisions to existing regulations. However, coordination and resolution of conflicts between different agency policies has not been emphasized. For example, the President's policy recognizes the nation's need to preserve and expand our minerals and materials economy yet GSA's management of the stockpile continues to weaken markets to the point of affecting the long-term viability of certain domestic mineral industries.

Stockpile Policy. AMAX has been very concerned with GSA's management of the national defense stockpile. The Department of Commerce and FEMA have initiated studies reviewing specific commodities, goals, commercial needs, etc. We suggest, at the very least, a further review be done to determine how GSA's disposal and acquisition practices have impacted mineral markets and the long-term viability of domestic mining industries. Congress has requested a similar study on the impacts of silver disposal.

## Exploration

Q. How much money do you spend annually for the purpose of minerals exploration? How much money are you prepared to spend annually? Sould you spend more if more Federal lands were open to exploration? Please elaborate on your exploration interest in the lower 48 states, and in the State of Alaska.

A. AMAX is in the business of exploring for and developing minerals world-wide. Our major exploration activities occur in the western United States and in an active exploration year, our exploration budget is around $70 - $80 million. In recent years, AMAX has had exploration activities in Colorado, Montana, Oregon, Utah, Wyoming, Nevada, California, New Mexico, Arizona, Missouri, Minnesota, Wisconsin, South Carolina and Alaska.

AMAX's interest in these states include precious metals, base metals, molybdenum, geothermal, polymetallic deposits and numerous other minerals depending on the economic factors surrounding each mineral at a particular time. Similarly, economics dictate an exploration budget, not land availability. Geologists look where they are allowed to look with the amount of dollars available. There is no question, however, that more mineral exploration would occur in the U.S. if more lands were available; exploration occurs where there is access to good mineralized areas. If the government limits access to the best areas, exploration will occur in other parts of the world where mineralization exists.

Q. Are these on Federal or non-Federal lands?

A. It is not a coincidence that the majority of our U.S. exploration is on federal lands. Most often mineralized areas are on western federal lands where the geologic activity has concentrated minerals. Unfortunately, these same regions are often considered prime areas for wilderness designation.

Many factors dictate an exploration strategy. But, basically, whether mineral occurrences are ore bodies, reserves, or mere resources is largely dependent upon ever changing economic factors. As technology and market

**Exploration Continued**

forces change, areas once explored may be promising in the future. It makes no sense to lock up resources simply because current economic conditions do not justify current extraction. Lands simply cannot be inventoried to the point of knowing all their mineral potential. Lands must be open to continued mineral exploration if we, as a nation, will ever begin to reduce our dependence on natural resource imports.

Q. Are there lands that you are interested in exploring that you are unable to explore? Are you prevented from doing exploratory drilling on Federal lands because of land withdrawals? If so, which areas specifically and which withdrawals (e.g., Wilderness designation, etc.)?

A. AMAX has explored in wilderness areas, wilderness study areas, and other areas with restraints on exploration activities. It should be noted, however, that exploration programs in these areas are of much higher risk to mining companies who will not have the opportunity to develop a resource in a wilderness after 1983. As a consequence, very few wilderness areas have been explored for mineral resources. While there are other lands open to mineral exploration, as a practical matter, these areas are considered "de facto" wilderness. These are areas where access problems and other environmental hurdles exist due to land management policies that favor resource values other than mineral exploration. These include wilderness study areas, Forest Service further planning areas, areas being considered for historic preservation, etc.

## Western World Mine Production of Cobalt in 1980[1]

| | |
|---|---|
| Oxide Ores of Nickel | |
| Australia | 1480 |
| New Caledonia | 200 |
| Philippines | 1400 |
| Indonesia | 200 |
| Sulfide Ores of Nickel | |
| Australia | 375 |
| Botswana | 310 |
| Canada | 1772[2] |
| Sulfide Ores of Copper | |
| Finland | 1400 |
| Zaire | 17,100 |
| Zambia | 3650 |
| Primary | |
| Morocco | 1100 |
| Total | 28,985 |

[1] recoverable cobalt content

[2] cobalt content of ores

Official Committee File

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George A. Watson, President

SENATE COMMITTEE ON
ENERGY AND NATURAL RESOURCES
RECEIVED
AUG 1 1983
WASHINGTON, D.C. 20510

July 29, 1983

Honorable James A. McClure, Chairman
Committee on Energy and Natural Resources
Washington, D. C. 20510

Dear Senator McClure:

I am enclosing my response to the questions you proposed in your letter to me of June 28, 1983, which I believe to be entirely self-explanatory. However, if you have any question at all, please call on me.

Very truly yours,

George A. Watson
President

# ON THE GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS

By

George A. Watson, President
The ferroalloys Association

## Supply of Raw Materials

I. Chrome Ores for metallurgical uses is being obtained from Albania, Finland, Madagascar, Republic of South Africa, Turkey and the USSR.

Unfortunately, purchases of chrome ore by the ferroalloy industry have been very small in recent years and little incentive is found to develop new sources of supply.

II. Manganese ores are obtained from the Republic of South Africa, Australia, Gabon, Brazil, Mexico and Morocco but, again, quantity is limited because of decreased ferromanganese production in the U.S.

The production of chromium and manganese ferroalloys in the United States has favored the use of a variety of ores blended to optimize chemical and physical properties of the ores which affect the resulting product chemistry, the recovery of the element from the ores, the efficiency of the furnace operation and take advantage of advantagious purchases in the open market. By comparison, smelters located on or near ore bodies are, so to speak, economically locked in to that ore and may suffer penalties in production.

## Research and Development

The domestic ferroalloy industry for many years was the world leader in basic research which led to many new processes and products but since 1970, research programs have been severely reduced and today are largely directed to achieve cost reductions or product improvements. Current economics have dictated that research result in immediate benefits in lower costs of production or in improved products.

Federal research programs have been successful in the past, as evidenced by the development of the electrolytic manganese process years ago. Useful research today could be directed toward developing processes to upgrade domestic ores as a "shelf" item should we be cut off from off-shore supplies. Alternatively, federal research monies could be spent on developing smelting processes for finely divided ores which could be available from domestic sources or from deep-sea nodules in the case of manganese. Certainly, federal monies should not be spent on trying to develop substitutes for chromium or manganese in steel production--industry will do that if, and when, forced to--an unlikely prospect.

## Diplomacy Questions

Foreign sources of supply can best be made secure by government steps to assure open, free and fair trade and good political relationships with such countries. Access in the short term to raw materials, such as chrome and manganese ores, is a function of industry and government need only step in when problems are encountered. Our best assurance for supply is American dollars offered for materials and at its present high value, is dearly sought by all countries.

I.M.F. funds should be used to encourage overseas development of all minerals, but only if such projects are financially sound and based on the deposits' characteristics and if such new supply does not aggravate an oversupply situation.

For many years, we have felt that in an emergency our allies in NATO and SEATO would depend on our stockpile and it is encouraging to see some movement by these countries to become less dependent on us by building their own stockpiles--modest as they are at this point in time.

There is always the possibility of cartels being formed, but the probability of their effectivness in manipulating prices is questionable. Nevertheless, attempts have been made to keep chrome and manganese ore prices up while lowering such ferroalloy prices to discourage ferroalloy production in non-resource countries.

## The President's National Materials and Minerals Program

The National Materials and Minerals Policy, Research and Development Act of 1980 has served to bring the Administration's attention to the problems of the minerals and metals industry and the President's report of April 1982, indicates this concern even if implementation of actions to expand our minerals and materials base seem small or non-existant.

The President's report seems lacking to me in one important respect--concern for the minerals processing industries which are being exported at an ever-increasing rate. I recall the words of Herman Kahn in 1972 when I was Assistant Director of the National Commission on Materials Policy:

> "Unless present trends are changed, our steel industry will be only as large as the available scrap supply and primary steel will be totally imported."

Perhaps this trend can't or shouldn't be changed if the world were different than it is, but because of present world problems, this trend must be stopped short of adversely affecting our national security and industrial strength. We do not seem to want to bite this bullet for fear of alienating our allies and offending the developing countries.

Domestic Situation

1. Contrary to popular belief, much recycling of strategic materials is being done today. Recycling and conservation of strategic materials occurs naturally, if economical, and should not be forced by dictate except in emergency situations. If prices for strategic material rise, more recycling and greater conservation will become quickly evident.

2. The stockpile is a good method for maintaining a secure and adequate supply of strategic materials but it needs constant review and updating to assure adequacy of amount and usefullness in an emergency.

3. Yes.

4, 5 & 6. Private stockpiling used to be a way of life for processors of imported minerals but not anymore because of high inventory costs. Normally, we would like to hold inventories that would vary from season to season and allow investments for gain, but not today.

7. I see no practical way for government to encourage private stockpiling other than outright subsidization of the costs.

8. Yes, provided such barter is for minerals and not processed products.

9. The government should develop processes that could be used in an emergency but not any monies for actual development of low-grade deposits. As an example, processes to utilize the stillwater complex could be developed and shelved for use in an emergency.

10. The Bureau of Mines programs on minerals information is very good and should be strengthened. R&D programs, as discussed before, on mineral processing are good but monies spent on recycling, substitution and conservation should be limited, if not eliminated. The USGS should continue to explore for minerals and to develop new prospecting techniques for locating minerals.

11. The Ferroalloys Association has recommended floor prices for certain products but only in the context of the national security.

## What Can be Done to Preserve Primary Smelting Capacity

The United States has always been dependent upon foreign sources for new supplies of chromium and manganese but in recent years, that dependency has shifted from dependency on ores or raw materials to one of dependency on ferroalloys that have been processed from ores and to the extent that today the production of ferrochrome and ferromanganese in the United States has virtually disappeared. This same scenario is being repeated in other metals such as aluminum, steel, specialty steels, copper, zinc and lead because foreign processors of minerals enjoy certain economic advantages not available to domestic processors and can thereby sell their goods in the U.S. market at prices frequently below domestic costs of production.

There is no question about the need to reverse current trends before much, if not all, of the U.S. primary smelting capacity is lost, but how to reverse these trends without espousing protectionism, abrogating our free trade policy stance or interfering in the free market system is a major problem. To let nature take its course, so to speak, will guarantee the demise of our primary smelting capacity with the ferroalloy industry leading the parade to oblivion. The following discussion of the ferroalloy industry's problems and measures that may be considered to solve or ameliorate the problems may or may not be pertinent or applicable to other smelting industries as each mineral and the metal processed from it has conditions and parameters not always the same in nature or at least differing in degree. We believe, however, that there are enough similarities between ferroalloy production and other smelting operations for this discussion to be useful to all concerned.

Our industry, like other primary processing industries, suffers today from the high value of the dollar which can be corrected only by more sane fiscal policies by the government which will reduce the deficit, lower interest rates and reduce the disparity between the dollar and other currencies.

Our smelting and refining industries suffer in international competition with industries that do not follow the same rules we are forced to live with. Government subsidies for export or for development are enjoyed by many foreign competitors while we lean over backward, it seems, to penalize our basic industries with strict environmental and health regulations not saddled on our foreign competitors. We need a more coordinated government approach to problems affecting basic industries which may be achieved, at least partially, by the proposed Department of International Trade and Industry that as one of its basic tenets should establish closer relationships with industry in meeting foreign competition. It is not enough to set up such a department without a mandate requiring consultations with and the involvement of affected industries in the decision process.

In particular, the ferroalloy industry has suggested a program dubbed "break-point duties" as a procedure to insure fair competition in the domestic market which could be applied to the minerals processing industries in general to prevent that capacity from being completely exported. The attached paper deals with this proposition is some detail and was successfully used for four years in the case of high-carbon ferrochrome production.

Official Committee File

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**G. A. Harris, C.P.M.**
Vice President
Materiel

ENERGY [illegible] RESOURCES
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JUL 20 1983

July 19, 1983

The Honorable James A. McClure
Chairman
Committee on Energy & Natural Resources
360 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Mr. Chairman:

Thank you for the opportunity to provide additional information regarding the geopolitics of strategic and critical materials. My replies to your June 28 letter and its questions are enclosed.

As you review these answers on the specific matters which you addressed, please bear in mind the overall context and a few key perspectives which framed my June 20 testimony to your Committee:

- o TRW's viewpoint, "mid-point in the production line", as uniquely representative of the broad U.S. metals-fabrication, industrial-user sector, with most of our manufacturing capacity representing "basic industrial and essential civilian needs" in the event of national emergency and industrial mobilization -- the basis underlying our deep concern about the inadequate condition of the U.S. Strategic Stockpile and with the needlessly slow progress in addressing its deficiencies.

As other closely related matters, not specifically addressed by your questions, I would like to bring the following to your attention:

- o The Defense Production Act again expires September 30, with relatively few legislative weeks remaining for action on this essential, longstanding emergency-preparedness statue -- one deserving of longer-term reauthorization, with fewer attempts to embellish it with nonessential amendments.

- The proof of U.S. materials-readiness -- or inadequacy thereof -- could readily be demonstrated if it were explicitly included in the next Executive Branch mobilization-readiness test.

- Cohesion of perspective and policy -- by both the multi-jurisdictional legislative and executive branch elements concerned with the national materials issue -- might be appreciably enhanced if this many-faceted program were to be included as a separate, unified chapter in the volume of the Budget of the U.S. Government which is now titled, "Major Themes and Additional Budget Details".

Again, thank you for your invitation for TRW views and the experience and information upon which they are based.

Very truly yours,

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Supply

-From which countries do you import strategic minerals necessary to your industry?

With few exceptions (e.g., nickel from Canada), almost all materials are purchased in semifinished or finished form. Many such items (e.g., steel, copper products, castings, electronic components, etc.) do contain strategic minerals which in turn are procured by our suppliers, one or two tiers down in the processing chain, and many such contained strategic minerals are imported from abroad from Canada, Brazil, South Africa, Malaysia, Zaire, Zambia, Zimbabwe, Finland, Jamaica, Norway, Australia.

We also directly import a few semifinished materials and components containing strategic materials from Japan, France and Sweden.

-What steps have you taken to insure long-term adequacy of your supply?

The following steps have been taken, where technically and economically feasible:

- Negotiation of 1 to 3-year supply contracts
- Development of second or multiple sources
- Negotiation of vendor stocking programs
- Tracking of future commodity availability determinants
- Long-term forecasting and planning of supply requirements with vendors
- Development of approved alternate substitute materials
- Investigation of design changes to reduce or eliminate use of critical materials

-If your supply were cut off, where could you obtain necessary minerals and materials?

For defense contracts and/or essential civilian needs: by use of priority ratings, allocations, and stockpile releases as provided by law and executive branch action under then-existing circumstances.

For commercial purposes: by searching the open market. We have never experienced a complete cut-off during peacetime.

-Have you encountered any change in the accessibility of supply from when you began purchasing materials from a particular region?

None of significance for those items we purchase directly from abroad; however, our suppliers (who purchase strategic minerals which are contained in the products that they make and sell to us) have experienced some significant changes, notably in the areas of cobalt and chromite.

-Why do you purchase materials from that particular region?

In every case, whether we buy directly from abroad, or indirectly by purchase of strategic minerals contained in the materials as supplied to us, the reasons for doing so are economic advantage (price, delivery, quality), and/or necessity based on geographic availability.

-Do feasible substitutes exist for the minerals or materials that you use?

In some instances, emerging technologies will permit a reduction in the use of some strategic and critical material. However, there are critical applications, many in defense systems, where substitutions are highly undesirable because of serious performance penalties. Lastly, the question of feasibility closely relates to cost: a technologically feasible substitute may exist but involve unacceptable cost penalties for peacetime commercial application; in time of national emergency, however, that cost may be justifiable as a survival measure. It is for this reason that high priority should be given to the Minerals Information Coordinating Committee and its intent to add substitutability information in later editions of the "Minerals Data Source Directory."

Research and Development

-Do you have any ongoing research and development projects? If so, please describe them?

TRW's relevant, strong R&D effort is described in the address by Dr. Arden Bement which is appended to my June 20th prepared statement to the Committee, particularly under the heading, "Technical Strategies", which appears about half way through that address, and also in response to your next questions, below.

-What areas of research would you find most useful?

We have projects to reduce cobalt and chromium content in engine valves, to reclaim high-value cuttings and grinding swarf for reclamation, to reduce the use of platinum-group metals in connectors and hybrid circuits, and others. We also are doing longer-range research to reduce the use of strategic metals through the use of improved surface modifications for improved wear and corrosion resistance, and through increased use of ceramics, polymers, and composites in place of metals.

-In your view, who should be doing this type of research?

The Federal government should sponsor long-range research for new materials and substitution technologies, for the qualification of alternate materials for defense applications, and for the substitution and conservation of strategic materials used in other government-sponsored programs. In some instances, federally-supported research may be required where the industry is too fragmented to invest in such developments. For many U.S. industries there are sufficient incentives in near-term substitution strategies to justify the needed investments.

-How successful do you feel Federal research programs have been? What could be done to improve these programs?

Federal research programs have been successful in identifying and developing new, less-critical materials candidates for strategic materials substitution. However, such R&D is relatively new and will have to be sustained to make an impact on current materials use patterns. Much more is needed to develop an information stockpile on the data and information being generated. In this respect, note my response about programs administered by the Bureau of Mines, under "Domestic Situation" in a later section of your questions.

Diplomacy Questions

-What should the U.S. Government be doing to make foreign sources of supply more secure?

The best peacetime source of security can be provided through the mutual economic interests of producers and consumers, consistent with free-trade philosophies to every extent possible. This has been and can be enhanced by international agreements and treaties with certain nations. The strategic minerals effort which was initiated in 1982, under the Trade Development Program (TDP) by State and Commerce Departments, appears to be a step in the right direction, warranting Congressional oversight and support. U.S. encouragement of American businesses' presence in source nations contributes to market stability, to market solutions to trade problems, and to improved information and insight as to local economic, social, and political trends.

More specifically, there also is a clear need for more explicit formulation of U.S. contingency plans: mineral-by-mineral alternatives which would be pursued in case of major peacetime supply interruption. The very existence of such plans can have deterrent value with respect to market disruptions which potentially can be initiated by some source-nation governments.

-Do you have any thoughts or recommendations as to what the Federal government could do to both maintain access in the short term to raw materials, while at the same time recognizing social conditions in these countries which could eventually lead to a lack of access?

There appears to be little immediately-effective action which the U.S. government can initiate to "maintain access in the short term". Social unrest or other causes of imports-interruption from some developing nations potentially can erupt with little, if any, warning. Long-term perseverance in U.S. efforts to promote soundly-based economic development, in turn providing the basis for greater social progress and stability, is conspicuously required and in U.S. interests. At the same time, this implies a need for effective, continuing roles by U.S. embassies or other government entities which can be supportive to American investors in such countries, whether the investors are minerals-consumers or producers. "Supportive roles" cannot extend to "interference" in a marketplace, however, and can perhaps be most valuable in terms of sound information made available to concerned, responsible American businesses.

-Do you support the use of IMF money to encourage overseas development of strategic minerals and materials?

Yes, within the bounds of sound economic policy and international relations which are implicit in the answers to the preceding two questions.

-What is the outlook for strategic minerals security in view of the stockpiles held by our allies in NATO and SEATO?

The emergency preparedness of U.S. alliances appears to be prejudiced by the short-term stockpiling, if any, by some countries, but we understand from Ambassador Walters' May 19th testimony before your Committee that this question is currently under review and discussion with them.

-Do you foresee a strategic minerals cartel being formed in the future?

Chances of such a new cartel may exist with respect to one or another individual mineral -- in part depending on how activist a role, if any, is played by the U.S.S.R. -- but in general reply to this questions, we foresee little likelihood of such an eventuality.

President's National Materials and Minerals Program Plan and Report to Congress:

-The President in his report addressed 5 components of the national minerals policy: land availability, minerals data collection, research and development, regulatory reform, and stockpile policy. Based on the President's recommendations in these 5 areas, what do you identify that has been accomplished since the report was issued in April 1982?

As indicated in my June 20 testimony, I am aware of and congratulate various constructive results achieved by separate agencies and departments during the first year of the President's program, while I also note that dissatisfaction with overall progress and direction is virtually universal in the private sector over the last year or more of Congressional testimony and other public statements by knowledgeable and authoritative materials persons. To give more specific credit where credit is due, and without intent to slight any noteworthy accomplishment which may unintentionally be omitted from the following abbreviated examples in response to your question:

-The Interior Department's efforts to preclude public lands set-aside (Wilderness, etc.) without adequate and balanced evaluation of their minerals and energy potentials have been soundly based, if unfortunately controversial, and such efforts are essential to long-term economic security and emergency preparedness of the nation. Efforts to catalogue more completely what are our public lands' geologic potentials are also commendable and worthy of support. Suitable compromise with valid environmental priorities should be attainable.

- Minerals data collection -- and equally importantly, public dissemination -- is a most vital element of the President's program, one in which improvements have been made (e.g., Spring 1983 publication of the "Minerals Data Source Directory"), and yet is one in which value and timeliness of results must be preserved from possibly undue budget restriction due to their sensitivity and potential vulnerability to cuts.

Increased FY83 federal funding of materials technology in general is encouraging, but detail is not readily enough available to attempt evaluating all specific individual departmental R&D missions. For example, elimination of FY84 budget request for the Interior Department's Minerals Research Institutes (funded at $9.4 million in FY83) appears inconsistent with the urgency connoted in the reference to the R&D program element in the President's report.

-"Regulatory reform" apparently has made some useful contribution, but applies most particularly to the minerals-production and processing sector. As an industrial user, TRW cannot comment in greater detail.

-Stockpile policy has benefitted from little accomplishment, although it is the single most important element of the President's program because the Stockpile is so essential to national security. This strong belief on my part was fully amplified in my June 20 prepared statement to the Committee. As of this writing, I continue to find it incredible that the extraordinarily small FY83 funding for completion of the Stockpile evaluation studies (described in my prepared statement) has not yet been found in the budgets of any of the Executive Branch departments which have the relevant responsibilities and interests.

-What has not been done which you feel should be?

Resolving the disparity between announced policy and resulting actions (as dwelt on in my June 20 prepared statement) appears to be the government's most urgent need.

As one element under that challenge, my written testimony recommended technological input--for Stockpile quality, form and quantity (or goals) validation. (For goals, in effect, I suggested bringing technological forecasting more strongly into the Annual Materials Plan process than appears to be the case, particularly based upon the findings of the NMAB report which I cited.) The National Materials Advisory Board seems to provide an existing, highly capable structure for these purposes--if a continuing charter of mission responsibility is assigned to it.

Second, the apparent dichotomy of both The National Security Council and the Cabinet Council on Natural Resources being "in charge" appears to need resolution--in favor of the NSC, as I read the National Security Act. (That wouldn't preclude some matters also being referred to the Cabinet Council for resolution when warranted, as I understand the intent underlying the Cabinet Councils).

Next, the communications link between government and the private sector--or vice versa--could be appreciably strengthened by the permanent establishment of a body such as recommended by the Transition Task Force on Strategic Minerals, chaired by Dan McMichael. The Task force advocated creation of a "PRAB--Private Resources Advisory Board". I would see that body being: (1) the avenue of appropriate, multi-disciplinary advice to the government from the private sector; (2) a qualified, detached advisor to government in the perspective of its also having adequate overview of plans and progress with respect to the national materials program, including the

Stockpile; and (3) the instrument for periodic progress reports to Congress and the public, and for assuring that subordinate elements of government adequately fulfill their public-information responsibilities. Particularly relative to the stakes involved, this would not be a costly step. The National Security Act, the Stockpile Act, and the Defense Production Act already provide ample statutory authority for establishing such an organization. The Administration should consider, however, initiating separate legislation for such a body, so that its continuation under successive administrations can be more permanently assured. Lastly, the stature, authority, and uniqueness of mission responsibilities of the pertinent suborganizations of FEMA and GSA (heterogeneous bodies, to say the least) should be enhanced, while lines of communication between them and with the NSC/EMPB need shortening and clarification, it appears.

-Are there any issues which you feel are critical to a successful minerals policy that weren't addressed in the President's Program Plan?

To an extent, this question has been answered in my replies to the preceding two questions. Certain of my points also appear to be borne out by the GAO's report to Chairman Glickman, as presented in GAO May 17, 1983 prepared statement to the House Subcommittee on Transportation, Aviation and Materials (of the Committee on Science and Technology). I also note that the Department of Defense report to Congress, specified by the Minerals Policy Act of 1980, has apparently not yet been submitted.

Domestic Situation

-How can we stimulate the recycling and conservation of strategic minerals?

Although market forces provide the basic incentives for recycling and conservation, the secondary recovery industry is highly fragmented and made up of small businesses, many of which are privately owned. Therefore, much of the R&D needed in this area can't be done or won't be done without government incentives and programs. Regional or national recycling centers for strategic metals could bring about economies of scale in processing costs, capital investment and returns on investment if federal incentives were provided in the form of loan guarantees and long-term purchase agreements against federal stockpile objectives.

-Do you feel that the National Defense stockpile is a good method for maintaining a secure and adequate supply of strategic minerals?

Yes, if properly implemented. Suggestions which bear on this point were emphasized in my written testimony.

-Do you favor selling materials in surplus as a means of gaining revenue in order to replenish the stockpile with materials that are presently deficient?

Yes! (consistent with provisions of the Stockpile Act, of course.)

Do you advocate private stockpiling?

Yes, if accomplished by companies at the lower processing levels in the production chain where the materials which are stockpiled can then become available for further processing to support the largest variety of semifinished products into which those materials are incorporated. For example, strategically critical materials required for steel should be stockpiled by mills at the raw material level rather than in the form of bars, sheets, and wire.

-If so, do you engage in this practice? Would you like to increase your inventory?

No, we do not engage in private stockpiling except for specific expected, short-term contingencies such as strikes, etc. Our purchased items are either components or in the form of semifinished materials (bars, strip, billets, tubes, wire, etc.) produced to particular specifications (dimensions, physical properties, chemistry, etc.). These are ordered in quantities suitable for production schedules to meet short-term customer requirements. Because the mix of products ordered by our customers changes often, we would not find it practicable or economical to increase inventories.

-If not, why?

See answer to above question.

-Could private stockpiling be effectively encouraged through Government subsidies or tax breaks?

If industry is to engage in any significant degree of private stockpiling, beyond its short-term production requirements and the occasional need for short-term contingency-hedging stocks, it will require an incentive in some form. It is unreasonable to expect that the direct customers of industry will subsidize the costs of private stockpiling, as the benefits therefore are related to general defense preparedness for the country as a whole.

-Do you favor the legislative proposal to increase the stockpile by exchanging U.S. agricultural products abroad for the necessary raw materials?

Yes. (However, it should be recognized in Stockpile budgeting that materials available by barter may not carry as high a national-security priority as certain other shortage materials, and yet will be transported and stored at expense of the Transaction Fund.)

-Do you believe the Government should spend money to make low grade domestic deposits developable if they are characterized as critical?

Yes, but only if this can be proven on a case by case basis to be more economical than stockpiling the necessary materials so as to provide a supply sufficient to permit development to occur after the prospect of a defense preparedness emergency is clearly visible.

-Please comment on the Federal programs related to strategic minerals which are administered by the Bureau of Mines and the U.S. Geological Survey.

To the extent which an industrial user has insight into these important programs, this has been touched on in answer to other questions.

-Do you favor floor price guarantees for domestic minerals?

No, except in very specific instances in which all other alternatives for providing protection of supply requirements via the Stockpile are proven to be less economical or infeasible.

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Official Committee File

SENATE COMMITTEE ON
ENERGY AND NATURAL RESOURCES
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August 3, 1983

The Honorable James A. McClure
Chairman
Senate Energy and Natural Resources Committee
Dirksen Senate Office Building
Room 312
Washington, DC 20510

Dear Senator McClure:

Enclosed are Pratt & Whitney's responses to the written questions developed during your recent hearings on the geopolitics of strategic and critical materials. Please let me know if we can be of further assistance.

Sincerely,

Judith A. La Drew

Judith A. La Drew
Washington Representative

Enclosures

JAL/jb

## SUPPLY

Question #1: From which countries do you import the strategic minerals necessary to your industry?

P&W Answer: Pratt and Whitney does not purchase strategic and critical minerals directly from producers. We purchase alloyed materials in the form of mill products, castings and forgings from suppliers, who in turn purchase directly from mineral producers.

Our suppliers directly or indirectly import the following strategic minerals:

| STRATEGIC MINERALS | MAJOR EXPORTING COUNTRIES TO U.S. |
|---|---|
| Titanium Sponge | Japan, China, U.S.S.R.<br>(The majority of titanium sponge is produced domestically by TIMET, R.M.I. and OREMET) |
| Cobalt | Zaire, Zambia, Belgium, Luxemburg |
| Chromium | Republic of South Africa, U.S.S.R., Philippines |
| Nickel | Canada, Norway, Botswana, Australia |
| Columbium | Brazil, Canada, Thailand |
| Tungsten | Canada, Bolivia, China |
| Vanadium | Republic of South Africa, Chile, Canada |
| Manganese | Gabon, Republic of South Africa, Australia |
| Tantalum | Thailand, Canada, Malaysia |

(Exporting information obtained from U.S. Department of Interior, Bureau of Mines)

## SUPPLY

Question #2: What steps have you taken to insure the long-term adequacy of your supply?

P&W Answer: Pratt and Whitney continues to work with existing qualified suppliers to expand and update facilities and encourage the stockpiling of critical materials. In addition, we are continuing to expand our base of qualified suppliers, and to work with various mills to approve processes that will allow increased utilization of processed scrap.

## SUPPLY

Question #3: If your supply were cut off, where would you obtain necessary minerals and materials?

P&W Answer: Should the supply of strategic elements be interrupted our suppliers would have to rely upon material already in the pipeline and stockpiled material. This could be available in the form of inventory owned by foreign exporters and warehoused in stable areas of the world or in the United States. Our suppliers could have a reserve level of inventory, or the GSA stockpile could be a source. We would work with our suppliers to seek out any suitable material available in the open market and pay premium prices to obtain what we could.

## SUPPLY

**Question #4:** Have you encountered any change in the accessibility of supply from when you first began purchasing materials from a particular country?

**P&W Answer:** Until 1979 Pratt & Whitney Aircraft always relied upon our suppliers to obtain the raw materials required for our engine components. When the supply of titanium sponge, cobalt and molybdenum became diminished during the 1979-1980 time frame, P&W entered the raw material market as did other aerospace companies, who had not normally purchased raw materials directly. The "new kids on the block" only served to raise the price of the available material. Supply quantity was not affected immediately although some new capacity was eventually stimulated by the substantial price increases in the materials mentioned.

## SUPPLY

Question #5: Why do you purchase materials from that particular region?

P&W Answer: Pratt and Whitney suppliers will purchase quality material wherever it might be available. 70% of the free world's cobalt is mined in Central Africa, so the choice as to accessible material is limited. Although 80% of the titanium sponge consumed in the United States is produced here, the supply was not adequate to satisfy the demand during 1979 and 1980. In fact, Pratt and Whitney went to a new country, China, for sponge when the U.S. and Japanese sources could not supply adequate quantities of material.

## SUPPLY

Question #6: Do feasible substitutes exist for the minerals or materials that you use?

P&W Answer: Titanium must be used for certain components of the gas turbine aircraft engine for it to operate with the thrust and efficiency we now achieve. There is no substitute for chromium in preventing corrosion and high temperature oxidation of steel and nickel base alloys used in the jet engine.

We were able to make some limited substitutions for cobalt containing alloys with cobalt free alloys by means of extensive testing and certification efforts. However, in one case the cobalt free alloy used contained columbium, which in itself is largely imported.

## DOMESTIC SITUATION

Question #1: How can we stimulate the recycling and conservation of strategic minerals?

P&W Answer: Pratt and Whitney has expanded its recycling efforts started in 1979 to reclaim and reuse scrap containing strategic and critical materials where economically feasible. Since 1979 we have recycled one million pounds of IN-100 material. New facilities such as our Columbus, Georgia plant (slated to open in December of this year) will have automated equipment for reclaiming scrap material. The industry does need specific R&D support in the reclaiming of specialized scrap like titanium to achieve the purity required for jet engine usage particularly in rotating parts.

## DOMESTIC SITUATION

Question #2: Do you feel that the National Defense stockpile is a good method for maintaining a secure and adequate supply of strategic minerals?

P&W Answer: The U.S. Government recognized the risk of foreign supply interruption more than 40 years ago when it authorized the Treasury Department to purchase rubber, tin and quartz crystals as part of the pre-World War II mobilization effort. Over the last four decades, the National Defense Stockpile -- as it is known today -- has seen many changes, and has been plagued by serious problems which have hampered its ability to operate as an efficient and effective organization.

The maintenance of an adequate and up-to-date National Defense Stockpile can serve as a deterrent for foreign suppliers who would artificially seek to control the price and supply of strategic and critical materials. While stockpiling alone cannot solve our vulnerability to foreign supply disruptions, it should be a crucial element of our national materials policy. National security requirements demand that our stockpile contain the necessary materials, in appropriate quantities, of sufficient quality to meet current industrial needs and of the correct grade and form to satisfy defense and essential civilian materials requirements.

## DOMESTIC SITUATION

Question #3: Do you favor selling materials in surplus as a means of gaining revenue in order to replenish the stockpile with materials that are presently deficient?

P&W Answer: FEMA's Stockpile Report to Congress (May 1983) indicates that currently 24 materials equal or exceed their goals while 37 are currently held in quantities lower than the goals established in 1980. Pratt & Whitney believes the revenues gained from the disposal of excess stockpile materials currently valued at $3.9 billion should be used to generate funds for necessary stockpile purchases.

## DOMESTIC SITUATION

Question #4: Do you advocate private stockpiling?

Question #5: If so, do you engage in this practice? Would you like to increase your inventory? If not, why?

Question #6: Could private stockpiling be effectively encouraged through Government subsidies or tax breaks?

P&W Answer: The concept of stockpiling would be extremely difficult at the P&W level, primarily due to the high inventory cost and the numerous chemistries that are utilized by our suppliers in their melt practices. Each raw material source has a particular melt practice that requires minerals within specific chemistry limits and sizes. The possibility of encouraging stockpiling through government subsidies or tax breaks could be an incentive for the melting suppliers, but not necessarily Pratt and Whitney.

## DOMESTIC SITUATION

Question #7: Do you favor the legislative proposal to increase the stockpile by exchanging U.S. agricultural products abroad for necessary raw materials?

P&W Answer: The Strategic and Critical Materials Stock Piling Act of 1979 authorizes the President to "encourage the use of barter in the acquisition of strategic and critical materials for, and the disposal of materials from, the stockpile when acquisition or disposal by barter is authorized by law and is practical and in the best interest of the United States (Section 6(c)(1) 50 U.S.C. 98 et. seq.)." President Reagan utilized barter in a 1981 transaction whereby the U.S. Government used a combination of direct cash purchase, exchange of excess materials from the National Defense Stockpile and barter of USDA agricultural commodities to acquire 1.6 million tons of Jamaican type metal grade bauxite for stockpile use. In addition the President endorsed the use of barter in his April 1982 National Materials and Minerals Program Plan and Report to Congress.

While barter transactions are much more complicated than direct cash purchases, there are important budgetary advantages. The following figures demonstrate the tremendous budget requirements if all stockpile purchases were conducted on a cash basis. To fill the 1980 stockpile goals at March 1981 prices would require the purchase of additional materials valued at approximately $12.5 billion. Assuming disposal of the $4.92 billion in excess materials (as of 1982), an additional $7.5 billion would be required to bring the stockpile inventories in line with the 1980 goals. Pratt and Whitney therefore advocates the use of barter in appropriate cases as a cost-effective means of correcting the current imbalance in stockpile goals and inventory.

## DOMESTIC SITUATION

Question #8: Do you believe the Government should spend money to make low grade domestic minerals deposits developable if they are characterized as critical?

P&W Answer: Any domestic mineral deposits with critical materials content provide us with known potential future resources. If the ores are low grade they could be developed under emergency circumstances even if they are not now commercially practical. Government should focus its efforts on exploration of federal lands to find and characterize all our potential resources. Secondly, it should support research to find more efficient and economical methods to extract and refine ores of all grades, particularly low grade ores which are more difficult to process. From such research future economical ventures may be possible where none exist now.

## DOMESTIC SITUATION

Question #9: Please comment on the Federal programs related to strategic minerals which are administered by the Bureau of Mines and the U.S. Geological Survey.

P&W Answer: This research and exploration should be supported or performed by the Bureau of Mines and U.S. Geological Survey. Although we are not familiar in detail with specific activities of these organizations, we hope that they would support the activities we have suggested in our answer to Question #8 (Domestic Situation).

## DOMESTIC SITUATION

Question #10: Do you favor floor price guarantees for domestic minerals?

P&W Answer: Pratt & Whitney believes that the U.S. Government should encourage domestic production of strategic and critical materials. Title III of the Defense Production Act of 1950 provides a wide range of financial incentives including floor price guarantees. Ultimately it is the Federal Government, the Congress and the mining companies involved who must determine the type and degree of support to be utilized.

Floor price guarantees could encourage domestic suppliers to mine and process minerals that otherwise would be imported from foreign countries.

Floor price guarantees could be an acceptable approach to supporting domestic mining operations or to filling the stockpile provided the difference between competitive market price and floor price was subsidized by the Government.

## DIPLOMACY

Question #1: What should the U.S. Government be doing to make foreign sources of supply more secure?

P&W Answer: Our best defense is a good offense. Continued support for R&D efforts, encouragement of domestic production and reform of the National Defense Stockpile are positive U.S. Government actions which will not only increase our ability to cope with supply interruptions, but also serve as a deterrent to those who might be tempted to manipulate our supplies of strategic and critical materials.

## DIPLOMACY

Question #2: Do you have any thoughts or recommendations as to what the Federal Government could do to both maintain access in the short term to raw materials, while at the same time recognizing social conditions in these countries which could eventually lead to a lack of access?

P&W Answer: UTC has not taken a formal position on this question.

## DIPLOMACY

Question #3: Do you support the use of IMF money to encourage overseas development of strategic minerals and materials?

P&W Answer: Pratt and Whitney has not taken a position on this issue

## DIPLOMACY

Question #4: What is the outlook for strategic minerals security in view of the stockpiles held by our allies in NATO and SEATO?

P&W Answer: Based on 1) the shortcomings of our own stockpile; 2) the minimal stockpiles held by NATO and SEATO countries and; 3) virtual total dependence of Japan and the European Community on foregin sources of supply for strategic and critical materials, the outlook is rather bleak.

## DIPLOMACY

Question #5: Do you foresee a strategic minerals cartel being formed in the future?

P&W Answer: The potential for minerals cartel action is a distinct possibility. A comparison with OPEC provides a useful perspective. Last year our oil imports totaled 13% while our imports of cobalt, chromium, columbium, and tantalum ranged from 90-100%. Furthermore the production capacity and mineral reserves for a number of strategic and critical materials is concentrated in the hands of only a few countries. The following table is taken from the Sept. 1980 Senate Foreign Relations Committee Print entitled "Imports of Minerals from South Africa by the United States and the OECD Countries." While the data is several years old, the situation is virtually unchanged.

### SOUTH AFRICA AND THE SOVIET UNION: 1978 PRODUCTION AND RESERVES OF 5 CRITICAL MINERALS AS A PROPORTION OF GLOBAL PRODUCTION AND RESERVES[1]

(in percent)

| | South Africa | Soviet Union | Total |
|---|---|---|---|
| Reserves: | | | |
| Chromium---------------------------- | 68 | <1 | [2] 69 |
| Manganese--------------------------- | 37 | [3] 50 | 87 |
| Vanadium---------------------------- | 19 | 74 | 93 |
| Platinum-group metals--------------- | 73 | 25 | 98 |
| Gold-------------------------------- | 48 | [4] 22 | 70 |
| Production: | | | |
| Chromium---------------------------- | 34 | [4] 32 | 66 |
| Manganese--------------------------- | 23 | [3] 43 | 66 |
| Vanadium---------------------------- | 39 | 31 | 70 |
| Platinum-group metals--------------- | 46 | 47 | 93 |
| Gold-------------------------------- | 58 | [4] 21 | 79 |

1 Source: U.S. Bureau of Mines, Mineral Commodity Summaries, 1979 (Washington, 1979).

2 An additional 30 percent of global chromium reserves are held in Zimbabwe.

3 The manganese data are for the "Central Market Economies" as a group, reflecting the Bureau of Mines reporting procedure. According to the Bureau, "the U.S.S.R. and the Republic of South Africa account for more than 80 percent of the world identified resources."

4 Data are for the Central Market Economies as a group, again reflecting the Bureau of Mines reporting procedure.

PRESIDENT'S NATIONAL MATERIALS AND MINERALS PROGRAM PLAN AND REPORT TO CONGRESS

Question #1: The President in his report addressed 5 components of the national minerals policy: land availability, minerals data collection, research and development, regulatory reform, and stockpile policy. Based on the President's recommendations in these 5 areas, what do you identify that has been accomplished since the report was issued in April 1982?

- What has not been done which you feel should be?

P&W Answer: President Reagan's National Materials and Minerals Program Plan and Report to Congress represented a very significant milestone in our nation's approach to the materials issue. We applaud the Administration's effort to address this subject in a comprehensive and coordinated fashion. The policy statement and report identified the country's basic materials problems and some of the actions necessary to reduce our vulnerability to supply cutoffs. Pratt & Whitney endorses the Administration's choice of the following cornerstones of our national materials policy.

- A National Defense Stockpile which contains materials in sufficient quantities and of the appropriate grade, form and quality to reduce our vulnerability to foreign supply cutoffs of materials which we normally import and need to support our economy and national security.
- Identification of domestic resources and the continued search for technology which would eventually allow these resources to be produced in an economical and environmentally acceptable manner.
- Support for R&D which can produce substitution options and conservation and recycling methodology in the future.
- Increased focus on national materials and resource issues through government awareness and action.

Progress has been made in both the stockpile quantity and quality questions. The Reagan Administration has instituted an acquisition program--the first in 20 years--to begin balancing stockpile goals and inventories. Recent acquisitions and purchase contracts include transactions involving cobalt, refractory grade bauxite, tantalum pentoxide, quinidine sulfate and iridium.

Increased consultations have also taken place to insure that industry input is solicited to determine industry specifications and the necessary quality and form of current and future stockpile purchases. Pratt and Whitney welcomes the opportunity to participate in the specification review process and has worked with appropriate USG officials to support this activity. In addition we are pleased that steps have been taken to assess the quality of stockpile materials and we are participating in the American Society for Metals and National Materials Advisory Board's industry panels which are reviewing this issue.

P&W Answer: (continued)

The quality, grade, form and quantity of stockpile inventories are extremely important factors in the stockpile question. But they are overshadowed by the critical importance of an effective stockpile organizational structure. Improvements in balancing stockpile goals and inventories are meaningless if stockpile management, policy and organization are left unchanged. For if the stockpile is not managed and organized effectively, other improvements will have little lasting effect.

Stockpile reform legislation has been introduced in both the previous and current Congress. Congressional hearings have also been held to discuss the need for stockpile reform and the best means to accomplish what appears to be a commonly accepted objective. Pratt and Whitney hopes that deliberations on this matter will continue and meaningful stockpile reform will be achieved soon.

While the Commerce Department's recently created Office of Strategic Resource has been aggressive in fulfilling its mission, it has a limited perspective and responsibility for materials policy. We still need to address the requirement for a permanent, high level, coordinating mechanism to implement the recommendations contained in the President's Material Plan. The Cabinet Council on Natural Resources and Environment has been designated by the President to coordinate national materials policy. This group operates on an ad hoc basis and was created by Executive Order rather than by legal statute — both serious shortcomings. In addition there are no clearly defined communication links either with appropriate government bodies or with the private sector.

PRESIDENT'S NATIONAL MATERIALS AND MINERALS PROGRAM PLAN AND REPORT TO CONGRESS

| | |
|---|---|
| Question #2: | Are there any issues which you feel are critical to a successful national minerals policy that weren't addressed in the President's Program Plan? |
| P&W Answer: | The President's Materials Plan contains recommendations regarding two of the three basic elements we believe are necessary to reduce our vulnerability to foreign supply disruption: the National Defense stockpile and materials research and development. Although the plan discusses land availability, it is silent with respect to government support for the use of Title III authority of the Defense Production Act (DPA) of 1950. We believe that our national materials policy must address concerns regarding meaningful stockpile reform; materials research and development; and encouragement and support for domestic production if significant progress is to be achieved on this matter. |

## RESEARCH AND DEVELOPMENT

Question #1: Do you have any ongoing research and development projects? If so, please describe them.

P&W Answer: Pratt and Whitney has undertaken a number of research and development programs to reduce our requirements for strategic and critical materials. The charts found in Appendices I and II provide information regarding some of our ongoing programs and serve to illustrate generic areas of research and development such as substitution and manufacturing technology efforts.

## RESEARCH AND DEVELOPMENT

Question #2: What areas of research would you find most useful?

P&W Answer: The three generic areas of material substitution, manufacturing technology, and scrap recycling, have all shown significant payoffs in reducing our requirements for strategic materials and should be continued.

## RESEARCH AND DEVELOPMENT

Question #3: In your view, who should be doing this type of research?

P&W Answer: This research and development has been successfully accomplished on a partnership basis between Government Agencies such as The Defense Advanced Projects Agency (DARPA), The Air Force Materials Laboratory (AFML), The Naval Air Systems Command (NAVAIR), The National Aeronautics and Space Administration (NASA), The University Community and contractors such as Pratt and Whitney Aircraft Group. This approach has provided the direction, means and incentives to continue this important work. In our opinion, it represents the best means to utilize all of our resources effectively.

## RESEARCH AND DEVELOPMENT

Question #4: How successful do you feel Federal research programs have been? What could be done to improve these programs?

P&W Answer: In our opinion these programs have been highly successful. In some areas the research and development is a slow process with some disappointments and redirections enroute to success. These programs should be supported at the highest level since they impact the security of the nation by reducing dependence upon foreign sources of key defense materials. We are concerned about potential R&D funding cut backs in this area because of general budget tightening, and growing apathy about the strategic materials threat since the problem has eased for the time being.

## EXAMPLES OF

## PRATT AND WHITNEY SUBSTITUTION RESEARCH AND DEVELOPMENT PROGRAMS

Appendix I

| Purpose | Status | % Gov't Funding | % P&W Funding |
|---|---|---|---|
| Rapid Solidification Rate (RSR) processing of superalloys for turbine blades and vanes to reduce cobalt usage. | In development | 60 | 40 |
| Use of RSR to produce aluminum with higher strength and resistance to higher temperatures thus reducing aluminum weight per application and replacing titanium. | In development | 50 | 50 |
| RSR processed iron-aluminides to replace titanium. | In development | 50 | 50 |
| Superalloy disk development to reduce cobalt content. | In development | 0 | 100 |
| Composite structures for low temperature structures to replace aluminum and titanium. | In development | 0 | 100 |
| Composite structures for intermediate temperature cases, nozzle flaps, and other structures, to replace titanium. | In development | 75 | 25 |
| High temperature composite structures to reduce usage of cobalt, nickel, chromium, etc. | In development | 25 | 75 |
| Titanium aluminides to replace nickel base alloys containing cobalt, chromium, etc. for intermediate temperatures. | In development | 75 | 25 |

## EXAMPLES OF

## PRATT AND WHITNEY MANUFACTURING TECHNOLOGY PROGRAMS

Appendix II

| Purpose | Status | % Gov't Funding | % P&W Funding |
|---|---|---|---|
| Nearer Net Shape forging to further reduce input material requirements of cobalt and titanium. | In development | 0 | 100 |
| Integral bladed rotors to reduce input material requirements. | In development | 50 | 50 |
| Rejuvenation and repair of major engine cases to reduce new part requirements. | In production | 100 | 0 |
| Rejuvenation of turbine blades and vanes to reduce new part requirements. | In production | 80 | 20 |
| Additional part rejuvenation and repair for other engines. | In development | 50 | 50 |
| High temperature repairable superalloy casting to replace forged and machined cases and reduce cobalt usage. | In development | 0 | 100 |
| Large structural castings to replace titanium and cobalt containing structures. | In production | 50 | 50 |
| Application of "retirement for cause" techniques to provide a means for achieving the full potential of parts. | In development | 70 | 30 |

# APPENDIX II.—ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

GERALD B. SOLOMON
MEMBER OF CONGRESS
24TH DISTRICT, NEW YORK
ROOM [illegible] CANNON BUILDING
WASHINGTON, D.C. 20515
[illegible]

GASLIGHT SQUARE
SARATOGA SPRINGS, NEW YORK [illegible]
[illegible]

CHAIRMAN
TASK FORCE ON NATIONAL DEFENSE

Congress of the United States
House of Representatives
Washington, D.C. 20515

COMMITTEE ON
FOREIGN AFFAIRS

SUBCOMMITTEES
AFRICA
RANKING REPUBLICAN MEMBER
HUMAN RIGHTS AND INTERNATIONAL ORGANIZATIONS
ASIAN AND PACIFIC AFFAIRS

COMMITTEE ON VETERANS' AFFAIRS

SUBCOMMITTEES
EDUCATION, TRAINING AND EMPLOYMENT
RANKING REPUBLICAN MEMBER
HOSPITALS AND HEALTH CARE
OVERSIGHT AND INVESTIGATION

May 23, 1983

Honorable James A. McClure
Chairman, Energy & Natural Resources Committee
United States Senate
Room 361, Dirksen Office Building
Washington, D.C.

Dear Senator McClure:

As a member of the House Committee on Foreign Affairs, I am increasingly concerned with the progress by the Soviet bloc in what some call the "resource war," or the techniques of "resource diplomacy." Indeed, it is more realistic to call the Soviet efforts to obtain military, political and economic control of the resources of the strategic minerals upon which the industrial base of the United States rests as "resource blackmail."

At present such distinguished experts as Frank R. Barnett, President, National Strategic Information Center, New York, report that the U.S. defense industry's operations and the economic viability of the United States itself depends on the importation of some two dozen non-fuel minerals. The U.S. is more than 90% dependent on thirteen of them, such as chrome, cobalt, manganese, platinum group metals, tantalum, industrial diamonds, columbium, corundum, strontrum, mica, graphite, bauxite-alumina and fluorspar, and more than 50% dependent on another thirteen of these strategic minerals.

I join with the experts in recognizing that without the access to reliable foreign supplies of these raw materials, the United States cannot make jet engines, machine tools, missiles, computers, television equipment, bombers, tanks, crank shafts, or drilling bits for the oil industry, just to list a few. Not only would our defense capacity be crippled if we were denied access to these minerals, but the vital interest that the consuming public has in the various products which require these minerals in their manufacture would be seriously impaired.

I am hopeful that members of Congress will devote their attention to a serious situation developing in southern Africa, and not be diverted by the collateral issues which obscure the real purpose of the Soviet bloc in seeking to enlarge its foothold in that region. At the present time the only shooting

DISTRICT OFFICES
[illegible] COLUMBIA TURNPIKE
EAST GREENBUSH, NEW YORK [illegible]
[illegible]
[illegible] WARREN STREET
HUDSON, NEW YORK [illegible]
[illegible]
[illegible] BAY STREET
GLENS FALLS, NEW YORK [illegible]
[illegible]

war on the African continent is the Soviet-sponsored effort of the South West Africa People's Organization (SWAPO), operating from bases in the southern part of Marxist Angola, to seize control of South West Africa/Namibia by way of the usual terrorist tactics. The SWAPO terrorists, armed with Soviet AK-47 machine guns, artillery, rifles, landmines and armored vehicles supplied by the U.S.S.R., backed by 30,000 Cuban soldiers, and guided by Soviet bloc military advisors, have camouflaged themselves in the false plummage of a local "liberation" front as they carry on the Kremlin's dirty work.

The fact is that South West Africa/Namibia has been selected by the Soviets as the gateway for the next forward leap in the "mineral resource war." Since 1975 the Soviets have controlled Angola, where they seized power through another front, the MPLA. They control Mozambique, as well as Ethiopia and South Yemen. Namibia is next, then what?

Thus, it seems clear that control of South West Africa/Namibia, which itself contains the largest open-pit uranium mine in the world and vast resources of copper, tin, zinc, tungsten, diamonds and other strategic minerals, is but a stepping stone toward further Soviet bloc efforts to control the rest of southern Africa. This would not only subject the U.S. to economic and "resource" blackmail whenever the Soviet bloc decided to turn the screw, but would also endanger U.S. national security because it would put the Soviets in a position to bisect the oil and mineral lifeline from the Persian Gulf. Some 28,000 ships a year come around the Cape of Good Hope and come up the western coast of South West Africa/Namibia carrying 70% of the fuel and minerals for the NATO countries of western Europe. If the Soviet bloc gained control of the Indian Ocean and this other oil and mineral shipping artery, the iron grip of the Kremlin on the U.S. industrial base would be almost complete.

I am hopeful that this hearing by the Senate Energy & Natural Resources Committee will develop a report which will emphasize the vital national security interest we have in stepping up our efforts to protect the U.S. industrial base from being crippled by Soviet efforts to control sources of critical minerals. We must not turn a blind eye on the inexorable forward thrust of the Soviet empire into southern Africa, and we must acknowledge that their ultimate target is the U.S. itself.

Very truly yours,

Gerald B. Solomon
Member of Congress

phelps dodge Corporation 1015 Fifteenth Street, N. W., Suite 803, Washington D.C. 20005 • (202) 789-1745

Charles S. Burns
Vice President Government Relations

July 25, 1983

Mr. Robert Terrell
Professional Staff Member
Committee on Energy & Natural Resources
360 Dirksen Senate Office Building
Washington, D. C. - 20510

Dear Mr. Terrell:

As you know, Mr. L. William Seidman, a director of Phelps Dodge Corporation and Dean of the College of Business Administration of Arizona State University, was scheduled to testify on behalf of Phelps Dodge at the Committee's July 22 hearing on the Geopolitics of Strategic and Critical Materials. Unfortunately Mr. Seidman was unable to attend.

In view of this, we respectfully request that Mr. Seidman's statement be made part of the hearing record. We also wish to submit for the record a paper prepared by Phelps Dodge Corporation on the "Effects on the United States Copper Industry of IMF and Multilateral Development Bank Loans to Foreign Copper Producing Countries." Copies of Mr. Seidman's statement and the position paper are attached.

Sincerely,

Charles S Burns

Charles S. Burns

CSB:jcb
attachments

# STATEMENT OF

L. WILLIAM SEIDMAN, DIRECTOR,
PHELPS DODGE CORPORATION
AND
DEAN, COLLEGE OF BUSINESS ADMINISTRATION
ARIZONA STATE UNIVERSITY
TEMPE, ARIZONA

AT THE HEARING ON
THE GEOPOLITICS OF STRATEGIC AND CRITICAL MATERIALS
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

JULY 22, 1983

Mr. Chairman, I am L. William Seidman, Dean of the College of Business Administration of Arizona State University, and I am appearing on behalf of Phelps Dodge Corporation, which I serve as a member of its Board of Directors. Phelps Dodge is the nation's second largest copper producer. It normally mines about twenty percent of the copper produced in the United States, at facilities in Arizona and New Mexico.

I am here to discuss the problem of unfair competition between U.S. private industry and foreign subsidized producers and, particularly in this regard, the adverse impact on the domestic copper industry of loans from international financing organizations, such as the World Bank and the International Monetary Fund (IMF), to less developed countries to maintain or expand their state-owned copper production. These financing organizations receive their most significant funding from the United States, and it is ironic that their activities -- well intended though they be -- are damaging U.S. industry and hurting our workers in order to subsidize socialized competition abroad.

I commend your Committee and its Chairman for conducting this hearing on this subject. It deserves the careful attention of the U.S. Government. Copper is a strategically important metal. Over the years we have been basically self sufficient in its production, and we have ample reserves to remain so. In normal years, companies in the United States produce about 23 percent of the free world's newly mined copper. But the danger exists that we can lose this self sufficiency by subsidizing socialized production abroad -- production that often would be uneconomic without financing subsidies.

Portions of my statement are based on a position paper on the subject prepared by Phelps Dodge. Since it is more extensive than my remarks, I wish to submit it to you and respectfully request that it be included in the hearing record.

The basic problem is this. The wave of nationalizations of LDC copper production that began in Chile in 1969 has put over forty percent of free world copper production under the ownership or effective control of these countries. These mines are no longer run by economic principles of supply and demand, but to maximize production to maintain full employment in a misguided effort to maximize foreign exchange revenue, regardless of profitability. These mines, however, compete directly with the private sector mines of the world, including our own domestic industry. In periods of recession, the manner of their operation hurts all the industry by creating excess inventories, driving prices to abnormally and destructively low levels, and forcing on to the private sector the full burdens of curtailing production to match reduced demand. In effect, the LDC mines thereby export their unemployment, as well as their excess production, to this country.

Without external aid, these countries and their socialized mines could not over the longer term continue overproducing during periods of such low prices. But they can disregard their losses, in large measure, because the IMF steps in and provides credits to keep these states -- and their mines -- operating. It is most difficult for any private industry to operate against state-owned enterprise, but the task facing the domestic copper industry becomes close to impossible when its foreign competition is virtually freed from the consequences of its uneconomic behavior by funds which are supplied in significant part by our own government.

The lending programs of the international development banks are also of great concern to the copper industry -- and to other basic domestic industries as well. In their drive to promote resource development of their client states, they can develop productive capacity that is harmfully excessive to marketplace needs. Let me give you an example.

Last year the copper industry suffered its worst year since the Great Depression. But nevertheless, Peru's state mining enterprise, Centromin, completed the expansion of its Cobriza mine from some 17,000 to 57,000 short tons of contained copper per year. Nearly $100 million of the project's $231 million financing was provided by the Inter-American Development Bank and the World Bank. Copper prices have recently edged back up to about $.80 a pound for the first time in two years, but that mine's break-even point is reported at $1.30 a pound, and the markets have no need for its copper. Meanwhile, in June 1982 the IMF approved a loan facility for Peru of $952 million. One can assume that a portion of this money will be applied, directly or indirectly, to fund the losses of Cobriza -- while its excess production weighs heavily on world copper markets.

Within the past four years, international development banks have participated in eight projects in six countries which increase copper production, and to our knowledge have at least four more such projects under consideration. The development of an LDC's mineral reserves before they are economic and before they are needed in world markets is no favor to the LDC's, and causes harm to our industries as well. The Senate Banking Committee recognized this earlier this year, in its report accompanying S.695, which authorized an increase in the U.S. contribution to the IMF. It reported that:

> "This economic interdependence [between industrialized nations and Third World countries] is jeopardized when investment practices of lending institutions in the industrialized nations foster the use of their financial resources to support fundamentally uneconomic Third World devement projects. The further consequences of such investment practices are to deprive these Third World countries of some of their best growth potential, to severely penalize economic industries in the industrialized nations and to endanger repayment of many of the investments."

That statement has been shown to be clearly correct in the case of the copper industry subsequent to the nationalization of LDC production. It has become a poorer business for all producers -- domestic and foreign alike. Its cycles of recession have become deeper and longer; its periods of recovery shorter.

The year 1982 illustrates the overall problem. As stated, it was a year of recession in copper's principal markets. Demand for copper was weak, declining by about 5% throughout the free world. A 5% decline (even from 1981 levels, which were also reduced) should have been manageable. Yet prices (expressed in U.S. currency) fell to their lowest levels (after adjusting for inflation) in more than fifty years, as the effect of the recession was compounded by continued high levels of production at state owned or controlled mines in South America and Africa. Only a handful of the world's copper mines were profitable, and major losses were recorded by both private sector companies and public enterprises. My company lost $74 million, and its results were better than many others.

Through all of this, foreign state mines continued to pump out excess copper at the highest levels of production they could achieve, leaving to the private sector companies not only the resulting abnormally low prices but also the full burden of curtailing production, closing mines and laying off miners in efforts to trim supply to demand. With the recession now ending for much of industry, the excess copper inventories built up because of this state mine conduct must now be worked off before recovery comes to our business. At the same time, Chile, Mexico, Peru, Zambia and Zaire have all received major IMF support.

It seems fundamentally wrong that these countries and their state owned or controlled copper production can take advantage of loans from international development banks and the IMF, using in large part our own money, to the detriment of a strategically necessary American industry and American workers.

The domestic copper industry, I emphasize, is not one which has become of itself no longer competitive. It has its high-cost mines, and its low-cost mines, just as do all our foreign competitors. We believe at Phelps Dodge that, if U.S. government policies don't stack the deck too heavily against us, our company can compete head-on and successfully with all our competition, domestic and foreign.

There are a number of approaches to avoiding damage to our industry from the unsound, subsidized behavior of socialized foreign competition. One is to improve the performance of the development banks and the IMF, and the Senate has recently passed legislation seeking to do that. An amendment to the IMF quota increase bill sponsored by Senators Domenici, Melcher and DeConcini would require the National Advisory Council on International Monetary and Financial Policies (the U.S. Government Council which develops U.S. policy in this field) to report every 90 days to the President and to Congress. The report would list all proposals for assistance from the IMF or the development banks supported by our government that would increase production of a commodity in surplus on world markets, or likely to be in surplus, and that would cause substantial injury to a U.S. domestic industry.

The amendment also directs the Council, in establishing policy guidelines for the guidance of representatives of the U.S. on these financing institutions to take in to consideration "the effect that country adjustment programs have upon individual industry sectors and international commodity markets (i) to minimize any projected adverse impacts; and (ii) to avoid wherever possible government subsidization of production and exports of international commodities without regard to economic conditions in the markets for such comodities."

The purpose of this legislation is to require our representatives to take our national interests into account in developing the policies and programs of their organizations. We strongly support it and look forward to its eventual enactment by Congress. Its basic thrust is educational. It assumes that if our representatives in these organizations become aware of the problems they are causing, they can bring reason to bear to avoid these problems in the future.

While the educational approach is important, we recommend consideration of a further measure -- creation of a mechanism whereby the domestic copper market can be separated from the world markets in periods of recession. Such a mechanism would ensure that the domestic industry could maintain its historic share of U.S. markets at prices set by supply-demand balances within the country during those periods. This can be done by a quota on imports of foreign copper and copper products, which would go into effect, or out of effect, when automatically triggered by indices of market activity. Indices which could be used, for example, are prices on the commodity exchanges or levels of industrial production. The quotas based on indices would assure that our domestic markets remain open and responsive to world competition at all times except in recession. Import quotas or similar arrangements currently exist for a number of domestic industries, and it is noteworthy that the U.S. Government has accepted under the General Agreement on Tariffs and Trade the use by Japan of a complex, sliding quota/tariff system for imports of refined copper.

Let me emphasize, Mr. Chairman, that the domestic copper industry is viable. It is able to supply virtually all of our nations's copper needs for the foreseeable future, and it is important to our national security. It should not be forced to bear the brunt of worldwide recession, shut down operations, lay off workers and face possible extinction as a result of unfair competition from state owned copper producers whose viablity (which would otherwise be in question) is ensured by activities promoted by American contributions of tax dollars.

Thank you for the opportunity to appear before you today.

# EFFECTS ON THE UNITED STATES COPPER INDUSTRY
# OF
# IMF AND MULTILATERAL DEVELOPMENT BANK LOANS
# TO FOREIGN COPPER PRODUCING COUNTRIES

PHELPS DODGE CORPORATION

July 20, 1983

The role played by the United States in the activities of the World Bank, the International Monetary Fund (IMF) and other major international financial institutions, and the harmful effects those institutions can and do have on domestic industry, is a subject that deserves careful consideration by the U.S. government.

This paper discusses the impact on the domestic and world copper industry of loans from the international financing organizations to countries that are producers of copper. While the discussion is here limited to copper, the points made and conclusions drawn are also applicable to a number of other domestic industries.[1]

The basic problem is this. The wave of nationalizations of copper production that began in Chile in 1969 has put over 40% of free world copper production under the ownership or effective control of less developed countries (LDCs). The World Bank and other international development banks, funded in major part by the United States, have as their mission fostering the economic development of these LDCs, and accordingly, these banks often lend money to permit them to maintain or expand existing mines or to open new ones. These mines compete directly with the private sector mines of the world, including our own domestic industry. In periods of supply-demand balance, competing with such socialized mines is not burdensome. However, in adverse market conditions these mines are not run by economic principles of supply and demand, but continue to maximize production to maintain full employment and in a misguided effort to maximize foreign exchange revenue. Operating in this manner hurts all the industry by driving prices to abnormally and destructively low levels, and leaves to the private sector alone the task of curtailing production to match reduced demand, forcing a disproportionate share of mine shutdowns and worker layoffs onto the private sector. The state owned mines can disregard their losses in large measure because the IMF then provides credit to keep those states--and their mines--operating.

## Two Recent Examples

The international development banks have been instrumental in establishing or expanding copper production in LDCs. Within the past four years, these banks participated in eight projects in six countries (Bolivia, Ecuador, Mexico, Morocco, Peru and Zambia) designed, at least in part, to increase copper production, and have four more such projects (in Bolivia, Peru, Zaire and Zambia) under consideration.[2] Two of these projects are worth particular note.

In 1982, while the copper industry was experiencing its worst year since the Great Depression, Peru's state mining enterprise, Centromin, completed the expansion of its Cobriza mine from some 17,000 to 57,000 short tons of contained copper per year. Nearly $100 million of the project's $231 million financing has been provided by the Inter-American Development Bank and the World Bank.[3] Copper prices have recently edged back up to about $.80 a pound for the first time in two years, but that mine's break even point is reported at $1.30 a pound,[4] and the markets have no need for its copper. Meanwhile, in June 1982 the IMF approved a loan facility for Peru of $952 million.[5] One can assume that a portion of this money will be applied, directly or indirectly, to fund the losses of Cobriza--while its excess production weighs heavily on world copper markets.

At about the same time, the World Bank's International Finance Corporation (IFC) was putting together a financing package of $1.0 billion to expand Mexico's Cananea copper mine, mill and smelter from 50,000 to 150,000 metric tons of annual capacity[6]--even though the ability of Mexico to handle her existing foreign debt was correctly a subject of great concern.

IFC planners appear to have estimated prices and costs optimistically. They figured "the Company can tolerate prices markedly lower than those projected, down to about $1.00-$1.10 [in constant 1981 dollars] during the period of repayment of the IFC loan."[7] They also shaved the project's capital and production costs by failing to require the capture of emissions from the expanded smelter[8] (air pollution controls are very costly, as all U.S. copper producers are most aware), even though its smelter stack is visible from inside the State of Arizona. The mine's private 48% shareholder declined to participate in the project and agreed to withdraw altogether from the operating company, Compania Minera de Cananea, S.A.[9]

This project was put on hold,[10] partly because Mexico's foreign debt posture has rapidly deteriorated and partly because IFC planners were brought up short by the wave of outrage that arose in the copper producing states of the west, particularly in Arizona and New Mexico, at the thought of their tax dollars going to fund an unneeded socialized competitor just across the border while their own mines were curtailed or closed and some 60% of Arizona and New Mexico's miners were unemployed. Recently, however, reports indicate the project may again be going forward.[11]

## The World Copper Industry

The outrage over Cananea arose because it is within sight of Arizona, but the impact on the domestic industry would have been just as harmful had the mine been halfway around the world. In a normal year, companies in the United States produce about 23% of the free world's newly mined copper. State owned or controlled mines in Chile (17%), Peru (5%), Zambia (9%), Zaire (8%) and Mexico (4%) account for about 42%. The remainder is produced mainly in Canada (11%), the Philippines (5%), Australia (4%) and the Republic of South Africa (3%).[12]

All that copper competes in the world markets, directly or indirectly. Copper can be freely shipped anywhere in the world for a few cents per pound and, although it is priced in many different ways, all of those prices reflect, and must remain close to, the prices set by transactions in the terminal markets--the London Metal Exchange and the New York Commodity Exchange.

Copper is thus a commodity in worldwide trade and competition. Therefore, even though the United States is virtually self sufficient in copper, domestic prices reflect world-wide production, sales and demand. Under normal economic conditions, world consumption and supply would now be in reasonable balance, and a reasonable balance is expected for the next several years.[13] Copper demand over the remainder of the decade is projected to grow more slowly than the economy generally--perhaps on the order of 2% per annum.[14]

Most major U.S. mines are, we believe, generally cost competitive with the mines of the rest of the world. We estimate, for example, that Phelps Dodge production costs are in the lower half of the free world cost spectrum. It is true, however, that domestic mines face much higher labor costs and must incur pollution control costs of 10-15 cents a pound which are not incurred by most foreign mines. And it is ironic that on the one hand the U.S. Government mandates increased costs for our domestic industry while on the other hand it subsidizes our foreign competition.

## The Recent Recession

Under most economic conditions our domestic copper industry is a viable world competitor. But in severe recessions, the behavior of state owned or controlled mines distorts the copper markets so badly that very few mines, anywhere in the world, can remain profitable. Over the longer term, this harmful behavior can be sustained only with support from the IMF.

The year 1982 provides a good illustration of this problem. It was a year of severe recession in copper's principal markets. Demand for copper was weak throughout the world, and inventories increased. Prices (expressed in U.S. currency) fell to their lowest levels (after adjusting for inflation) in more than 50 years, as the effect of the recession was compounded by continued high levels of production at state owned or controlled mines in South America and Africa. Only a handful of the world's copper mines were profitable. Costs at the major South American mines (already among the lowest in the world), as well as those in Africa and elsewhere, were aided by currency devaluations.

Through all of this, foreign state mines continued to pump out excess copper at the highest levels of production they could achieve, leaving to the private sector companies not only the resulting abnormally low prices but also the full burden of curtailing production, closing mines and laying off miners in efforts to trim supply to demand. As a result, even though free world demand for refined copper was off by only 5% in 1982,[15] mines in the United States and Canada produced at about two-thirds capacity. This is illustrated in the following table (in thousands of short tons):

| | 1982 Mine Production[16] | 1982 Effective Capacity[17] | Percentage Use of Capacity |
|---|---|---|---|
| United States | 1,250 | 1,912 | 65 |
| Canada | 708 | 947 | 75 |
| Chile | 1,360 | 1,240 | 110 |
| Mexico | 254 | 308 | 82 |
| Peru | 401 | 480 | 84 |
| Zaire | 550 | 560 | 98 |
| Zambia | 584 | 690 | 84 |

The IMF approved loan facilities totaling $882.5 million for Chile in January 1983 and subsequently eased its terms and provided another $318 million without conditions when Chile failed to meet the original loan conditions.[18] Early in 1983, $3.9 billion for Mexico was approved,[19] as was $960 million for Peru in 1982. In June 1981, the IMF approved a standby loan facility to Zaire of $1.06 billion, suspended in July 1982 because of Zaire's failure to meet certain financial standards.[20] Zambia was granted a $944 million loan in May of 1981, which was suspended in April 1982 with $550 million undrawn.[21] Zambia has been negotiating with the IMF for additional loans and was granted a $228 million one-year economic adjustment loan in April 1983 and a $105 million loan in May to help cover a decline in its export earnings, specifically because of weak world markets for copper and cobalt.[22] The United States provides roughly 20% of these IMF loans.[23] While IMF loans cushion the socialized mines from the full consequences of their actions, domestic copper companies and miners are left not only to absorb that full impact, but also to stem the flow of red ink as best they can on their own.

## Future Role of Multilateral Development Banks

At this writing a recovery from the 1980-82 recession appears to be under way. Because the unsound economic actions of the socialized mines are the primary cause of the problem faced by our domestic copper industry--with IMF support for those actions the secondary cause--it is important that this problem be promptly addressed, before an expanding world economy induces the multilateral development banks into an unneeded new round of expanding socialized copper production. Over the course of the next economic recovery, the actions of the development banks can have a marked effect on the future of the domestic copper industry--for better, if the banks stay out of developing or expanding state mines elsewhere; for worse, if they do not.

On this point there is reason for concern. The World Bank has recently announced that it will increase its lending by $2 billion over the next two years in a "Special Action Program" to help developing countries accelerate existing development projects that have been halted or slowed due to the sharp drop in world prices of raw materials. The Bank will raise most of the $2 billion by increasing its borrowing in private financial markets through fiscal 1985. This is in addition to $30 billion of World Bank borrowings previously announced. These funds will, in turn, be loaned to developing countries at interest rates below market rates.[24]

A basic question, of course, is why a free enterprise country like the United States should take money--that in one way or another is provided by its taxpayers--to support socialized competition against its own people. We believe that it clearly should not, that if we are to contribute to the development banks, those banks should be restricted in their lending authority to projects that pertain to a country's infrastructure: railroads, highways, electrification, communications networks, health and education.

Whether the U.S. government has sufficient power to impose such restrictions on the development banks is questionable. It could, of course, withdraw from participation and strong arguments can be made that it should. Short of that, however, some meaningful steps can, and should, be taken.

In late 1981 a law was passed to try to reach the problem. Section 522 of PL 97-121 directs the Secretary of the Treasury to "instruct the United States executive directors of the International Bank for Reconstruction and Development, the International Development Association, the International Finance Corporation [all of which constitute what is known as the World Bank], the Inter-American Development Bank, the Asian Development Bank, the African Development Bank, and the African

Development Fund to use the voice and vote of the United States to oppose any assistance by these institutions, using funds appropriated or made available pursuant to this Act, for the production of any commodity for export, if it is in surplus on world markets and if the assistance will cause substantial injury to United States producers of the same, similar, or competing commodity."[25] This provision, which applied to monies appropriated for 1982, did not work in the case of the Cananea expansion, but something along its lines, made a bit stronger, might be of help.

## The International Monetary Fund

No similar restriction applies to the IMF, yet a means must also be found to limit the harmful by-products of its functions. That credit from IMF is available to cover the operating losses of state owned copper mines not only magnifies the problem caused by the development banks, but also encourages private banks to loan to these mines, knowing there is a deep pocket to bail them out. The IMF's loans to LDCs, of course, are generally conditioned on specific requirements, along with sound advice, intended to put the debtor country's financial house in order. In describing its policy, the IMF has stated that "[a] country making use of the Fund's resources is generally required to carry out an economic policy program aimed at achieving a viable balance of payments over an appropriate period of time."[26] This is known as "adjustment" and traditionally revolves around austerity measures. However, "[t]hese adjustment policies place additional emphasis on measures to create conditions conducive to an improvement in the supply of resources and a broadening of the productive base."[27] What adjustment therefore may appear to mean for a country whose principal exportable commodity is copper is that its copper producing capability must be used, and perhaps increased, in order to assure hard currency inflows that will (hopefully) reverse the country's negative balance of payments position. If such is in fact the case, the IMF would better serve its client states and the world economy by taking a broader than country-specific view of resource production. In times of recession, foreign exchange may be improved by producing less, rather than more, of a commodity in excess supply on world markets.

The matter of IMF and multilateral development bank loans may therefore warrant prompt addressing not only because of damage they can do to our domestic industries, but also because they may be fundamentally unwise for the client states as well. By maintaining productive capacity and encouraging its increase--in the face of what appears to be a period of declining, or at least historically reduced, growth in the world copper markets--this government intervention in the free market system may be locking in low copper prices and inadequate returns for many years to come and, in the process, distorting optimal economic distribution and use of the commodity.

## Recommendations

There are, basically, two approaches toward protecting our domestic copper industry from harm from unsound economic behavior by its socialized, subsidized foreign competition during periods of recession. We recommend that both avenues be pursued.

The first would be to improve the performance of the development banks and the IMF. In its consideration of legislation to authorize an increase in the U.S. quota to the IMF, the Senate adopted an amendment to do this.

Under this amendment, the National Advisory Council on International Monetary and Financial Policies, which serves to develop policies for U.S. participation in the international development banks and IMF, is required to report to the President and to Congress every 90 days all applications which have been filed for assistance to either the IMF or the development banks which would increase production of a commodity that is in surplus, or likely to be in surplus on world markets, that would cause substantial injury to U.S. industry.

This amendment also directs the Council, in establishing policy guidelines for the guidance of representatives of the U.S. on the IMF and international development banks, to take into consideration "the effect that country adjustment programs have upon individual industry sectors and international commodity markets (i) to minimize any projected diverse impacts; and (ii) to avoid wherever possible government subsidization of production and exports of international commodities without regard to economic conditions in the markets for such commodities."

The other avenue would be to create a mechanism whereby the domestic copper market can be separated from the world markets in periods of recession, so that domestic prices could be set by supply-demand balances within the country during those periods. One way to do this is to enact legislation establishing a quota on imports of foreign copper and copper products, at a level significant enough to free the domestic market (perhaps 10-15% of anticipated consumption) and to go into effect, and out of effect, when automatically triggered by certain indices of market activity. It could, for example, be triggered when copper prices on the New York Commodity Exchange drop below $1.00 (adjusted for inflation or deflation) for some period of time and be released when prices on the London Metal Exchange rise to a translated level of $1.00 for some period of time.

Such an approach would defend against the harm to our domestic industry caused by the multinational financing organizations during recessionary periods but keep our markets open and responsive to world competition at all other times.

The domestic copper industry is viable, able to supply virtually all of our nation's copper needs for the foreseeable future, and important to our national security. If these recommendations are implemented, it will remain strong and productive for many years to come.

Phelps Dodge Corporation

FOOTNOTES

[1] The American steel industry, for example, has experienced similar problems and is suggesting the following be U.S. Government policy:

> "As to trade, foreign steelmakers should be discouraged from building steel mills (or maintaining excess capacity) merely to satisfy the only open market in the world--the United States. Private, public and international banking institutions should not export money for the purpose of building foreign capacity in excess of the needs of that foreign country. And, the U.S. should insist that OECD countries refrain from making loans for steel facilities which add to world over capacity."

Executive Summary of "The American Steel Industry's Problems: Severe But Solvable" (A Position and Policy Paper), American Iron and Steel Institute, February 1983, p.3.

[2] Statement of Thomas C. Dawson, Deputy Assistant Secretary of the Treasury for Developing Nations, before the Subcommittee on Mining, Forest Management and Bonneville Power Administration of the Committee on Interior and Insular Affairs of the United States House of Representatives, February 10, 1983.

[3] "Centromin Invests $261 Million to Expand Cobriza Production," Engineering and Mining Journal, August 1982, pp.78-83.

[4] Metals Week, February 28, 1983, p.8.

[5] "IMF Approves Loans for Peru Totaling About $952 Million," The Wall Street Journal, June 8, 1982.

[6] "Report and Recommendation of the President to the Board of Directors on a Proposed Investment in Compania Minera de Cananea, S.A., Mexico," July 1, 1982, Document of the International Finance Corporation, Report No. IFC/P-509, p.1.

[7] "Mexico, Compania Minera de Cananea, S.A., Project Appraisal Report," July 1, 1982, Document of the International Finance Corporation, Report No. IFC/T-427, p.39.

[8] Ibid., p.19.

[9] "Report and Recommendation of the President, etc.," cited in note 6, p.3.

[10] "Mexico's Money Woes Cause Mine Suspension," American Metal Market, February 17, 1983, p.1.

[11] April 26, 1983 letter from Thomas C. Dawson, Deputy Assistant Secretary (Developing Nations) of the Department of the Treasury, to Representative Jim Weaver, Chairman of the Subcommittee on Mining, Forest Management, and Bonneville Power Administration of the Committee on Interior and Insular Affairs of the U.S. House of Representatives.

[12] Mine Production for 1981, *World Bureau of Metal Statistics*, February 1983, p.33.

[13] *Recession, Survival and Reconstruction: The Structure of the Base Metals Industries after the Recession and the Policy Implications*, Commodities Research Unit Limited, January 1983, p. 112 (although supply is generally expected to exceed demand).

[14] *Copper Studies*, CRU Consultants Inc., December 1982, p. 1.

[15] Phelps Dodge Corporation estimate based on *World Bureau of Metal Statistics*, February 1983, p.36.

[16] *Ibid*., p.33.

[17] Phelps Dodge Corporation estimate.

[18] "I.M.F. Easing Chile Loan," *The New York Times*, May 9, 1983.

[19] "Update on IMF Loans," *Washington Report* of the Council of the Americas, February 1983, p.[2].

[20] *The Wall Street Journal*, October 6, 1982.

[21] "IMF Cuts Off $4.9 Billion in Loans to 15 Countries," *The Wall Street Journal*, April 19, 1982.

[22] "IMF Clears Zambia for $105 Million, "*The Wall Street Journal*, May 24, 1983.

[23] "Reagan Plans to Ask Congress This Week to Increase U.S. Contribution to the IMF," *The Wall Street Journal*, February 14, 1983, p.2.

[24] "World Bank to Boost Lending to Some Developing Nations," *The Washington Post*, February 24, 1983.

[25] 22 *United States Code Service*, Lawyers Edition, 1982, Section 262h.

[26] *IMF Survey*, November 1982, p.1.

[27] *Ibid*., p.3.